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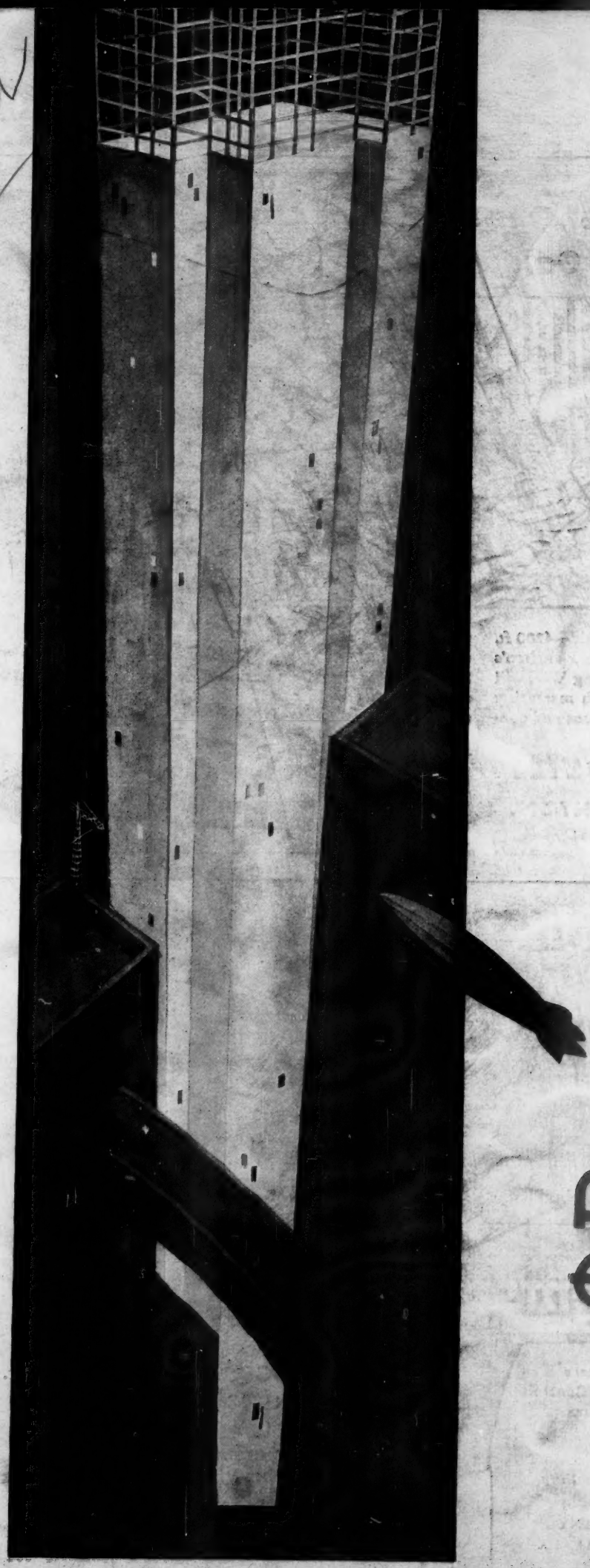

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The AMERICAN ENGINEER

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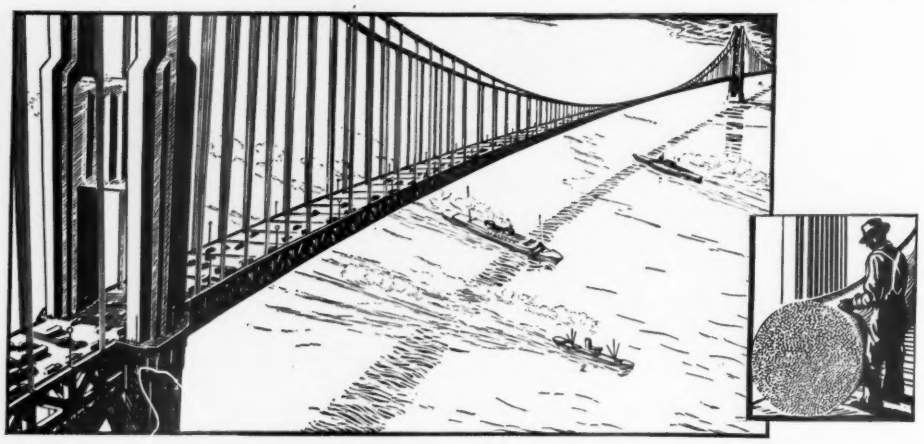

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ARTHUR V. SHERIDAN, EDITOR

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NUMBER 8 SEPTEMBER, 1934

A REFERENDUM

New York State Society Application

For Membership in National Society

Submitted to Membership for Ratification

ON September 3rd the organization of the National Society of Professional Engineers was completed, its constitution adopted and its first officers chosen. At the time applications for charters as member societies were received from Connecticut, New Jersey, Pennsylvania and New York. Before these states can be formally admitted to the federation to be henceforth known as the National Society of Professional Engineers it will be necessary for the several state bodies making application to submit the proposal to the membership of their respective organizations.

Primarily sponsored by the New York State Society, in fulfillment of one of its objectives, the extension and unification of professional state organizations, will henceforth be a national endeavor. The new National Society enjoys an unusual distinction, in that it is the only strictly professional American engineering organization. It is not merely another society. It hopes to occupy a position in national affairs similar to that now enjoyed in New York by its state professional society. The following inquiry from a professor in the Department of Engineering of a mid-western University is an indication of the attitude which seems prevalent throughout the country:

"September 11, 1934.

"Mr. Willard S. Conlon,
City Engineer,
Stamford, Conn.
Dear Sir:

Recent news items report the organization of a National Society of Professional Engineers, and tell also of the organization of a State division in connecticut.

No address of the National group is given and I am taking the liberty of writing you for this information and for such other data as would show the purposes of the Society. If this organization proposes to develop itself into such a body as will be able to coordinate the engineering profession and be a sort of spokesman for it, I am interested.

In my humble opinion, no greater good could be done the profession nor the country than to have a national organization which would represent the engineering attitude and viewpoint. I have an idea that it should be a duty rather than an honor to belong to this group; there are enough "honor" groups already. The aloofness of the engineer to public questions, his clannishness and his lack of ability to mix with people on their own, or nearly their own, grounds—all these need to be combatted. And so I wish to learn as much as possible as to what this organization proposes to do.

Thanking you for whatever information you may be able to give on this subject, I am

Yours truly,
(signed)
Professor of Civil Engineering."

The value and success of the local professional organization has been demonstrated in a most convincing manner and the need for an agency to co-ordinate the endeavors of state bodies has been most apparent during the past year.

The principal problem confronting the New York State Society is how to meet the dues required for national affiliation. Can the present dues be maintained and the running expenses of the Society and the Chapter reduced, or will it be necessary to increase the present amount sufficiently to meet the added expenditure.

The acceptance of a charter as a Member State Society will mean that every professional Engineer, who is a member of the State Society, automatically becomes a member of the National Society. It will also mean that no professional Engineer in New York State can be a member of the National Society except through the State Society. This arrangement is intended to mutually strengthen both organizations.

The National Society will take over the expense of publishing the monthly magazine (which thereby becomes a national publication) now borne by the State Society. The National Society dues, including subscription to the magazine, will be $4.00

(*Continued on Page 16*)

National Society Meeting

New York, September 3, 1934

Constitution Adopted—Officers Elected

ON Labor Day the new National Society, after a lengthy session of accredited representatives, adopted a constitution and designated officers for the year 1935.

A meeting of the Society will take place in Portland, Oregon, on October 3rd, at which time President Steinman, Vice-President Kelly and Secretary Legare will address Engineers of the Pacific Coast. Cooperation from the National Council of State Boards of Engineering Examiners and the Canadian Professional Engineers will be extended.

The minutes of the meeting of September 3rd, as recorded by Secretary Knight, are herewith appended.

Minutes of Meeting Held September 3d, 1934, at Grand Central Terminal, New York City.

The meeting was opened at 10:40 A. M. by Temporary President David B. Steinman, with the following Executive Officers, members of committees and invited guests present:

Dr. D. B. Steinman, Temporary President, New York; Gerald W. Knight, Temporary Secretary, New Jersey; Arthur V. Sheridan, New York; R. M. Boynton, New Jersey; James H. Griffin, New York; Col. Hugh A. Kelly, New Jersey; T. Keith Legare, South Carolina; S. A. Keast, Pennsylvania; Morris Goodkind, New Jersey; Willard S. Conlon, Connecticut; H. E. Harris, Connecticut; Z. F. Cappabianca, Connecticut; F. E. Schmitt, New York; Donal L. Chamberlin, Washington, D. C.

Following Roll Call, the Secretary read the minutes of the May 25th meeting, which were approved as read. Dr. Steinman then read the following statement:

The National Society of Professional Engineers is the only national organization in which membership is limited exclusively to Professional Engineers,—those who have been qualified by statutory authority and admitted to practice in the Engineering Profession.

The Professional Engineer has invested many years in study, training and experience, as preparation for his professional career. The National Society of Professional Engineers is organized to protect and enhance the value of this investment. It is organized to protect Engineers against discrimination, inadequate compensation, restriction of rights of practice, misappropriation of the designation, competition by the unqualified, and unethical practices. It is organized to increase the demand for engineering services, to raise standards of fees and salaries, and to build up public appreciation and recognition of the Engineer. It is organized to do these things through united action, legislation, enforcement, and a planned campaign of public education.

The National Society is organized to do for the Engineer what the Medical Association and the Bar Association have done for their respective professions, in increasing prestige, legal protection, and professional recognition.

Every Engineer has two major interests or obligations with respect to his profession:

1. *Technical,*—to share in augmenting and disseminating the store of scientific and engineering knowledge which is the technical heritage of the Profession.

2. *Professional,*—to share in advancing the qualification standards, legal standing, economic welfare, and public recognition of the Profession.

To discharge our indebtedness to our *technical* heritage, we have our Technical Societies. These older organizations were founded for the advancement of the science of engineering. Through the publication of technical papers, the stimulation of research, and the encouragement of contributions to engineering knowledge, those Societies fulfill their function. Through membership and active participation in those organizations, the individual Engineer makes his contribution to the enlargement of the Profession's fund of technical knowledge.

To discharge our indebtedness to our *professional* heritage, we now have the National Society of Professional Engineers. This organization is founded for the advancement of the non-technical interests of the Profession. This Society is consecrated to fostering the ideals and the traditions of the Engineering Profession, to stimulating public service within the Profession, to guarding high standards of professional honor, and to conserving and strengthening public confidence and esteem. *Through membership and active participation in this organization, the individual Engineer renders his contribution toward making Engineering a better and more satisfying Profession than he found it.*

The technical societies, for the best fulfillment of their essential purpose, are divided on lines of differentiation of technical branches or specialties. This division into separate organizations prevents effective united efforts for the interests of the Profession as a whole.

For effectuation of the *professional* objectives, a united organization is required, with subdivision only on the geographical lines of States and political subdivisions of States, and not on lines of technical differentiation or specialization. For successful accomplishment as a *professional* society, unity and geographical organization are the essentials.

The State Societies of Professional Engineers have already demonstrated the effectiveness of this

(*Continued on Page 16*)

SCIENCE IMPROVING AMERICAN CIVILIZATION

By Dr. Arthur H. Compton

(Address delivered under auspices of The Crusaders, Inc., over The National Broadcasting System).

SEVERAL years ago I was reading Marco Polo's account of his experiences in the employ of the great emperor of China, Kublai Khan. He was telling his incredulous Venetian friends of the daily life of the Chinese. "They take two baths daily," he wrote, "one in the morning and another in the evening. Not only this but the baths are in warm water." The idea of daily baths was itself sufficiently difficult for the Venetians to believe, but that sufficient water could be warmed twice daily seemed to them to present an insurmountable difficulty. All the wood in the forests of China would soon be burned to supply the heat, they thought.

Polo replied that it would indeed have been impossible to heat the water for the millions of Chinese if they had relied upon wood for fuel. They had however, solved the difficulty by finding a kind of black rock which would burn. This rock had the advantage over wood that it would hold its fire overnight and have the water warm for the morning bath. Then Polo described in accurate detail how this black rock occurred in veins in the mountains, and the manner in which it was quarried. If the idea of baths twice daily was marvelous, the story of burning rocks was beyond the realm of possibility.

Marco Polo's stories read like the tales of a man who after visiting a highly civilized country returns to his semi-barbaric home to tell of the wonders he has seen. At that time, hardly seven centuries ago, China was far in advance of Italy, whose culture was the pride of our Western civilization.

Shortly afterwards I had the privilege of visiting China, and I saw what, gauged by our Western standards, was a primitive country. In seven short centuries the leadership has passed from the East to the West, until we are now as far ahead of the Orient as in Polo's day China was ahead of Italy.

Why this rapid change. Differences in native ability will not explain it. It was only a few centuries ago that a Mongolian ruler, Genghis Khan, held sway over the greatest empire, with regard to both area and population, which has ever been united under one government. Nor have the Chinese been lacking in feats of engineering. The Great Wall of China, a massive pile of masonry extending over mountainous country for fifteen hundred miles, takes a high place among the wonders of the world. It is doubtful whether either in individual ability or in aptitude for organization the European or American has any real advantage over the Mongolian.

At about the time of Polo, however, there arose in various parts of Europe the scientific spirit—the eagerness to learn from Nature her truths, and to put these truths to the use of mankind. The rapid change in our mode of living since that time can certainly be traced to the consequences of the development of this spirit of science. If you do not believe this, go to the Orient, where in many places you will find spinning wheels, potters' wheels, and other tools in use today such as the Occident had centuries ago. Industry by itself is stagnant and static. It needs science to make it progressive and dynamic.

Almost everything we touch is, in part, due to scientific investigation. At almost every stage of the development of the automobile and the steam or electric train, science was called upon. It made possible the elevator, without which the skyscrapers of the modern city could not exist. Typewriters, printing presses, the radio, have all had their scientific development. At home we sit down to a table on chairs produced by scientifically conceived tools. The table-cloth was woven on scientifically constructed machinery. The very dishes from which we eat were made possible by experimentation with high temperatures, so that the ancient art of the potter might keep step with our age. Indeed, from our conversations over the telephone to the drinking of pasteurized milk, our whole day's life is inextricably bound up with scientific research.

The benefits of science are, however, not only these material ones. Of perhaps greater significance is the change that the growth of science had made in man's attitude toward life. It is frequently overlooked that men did not always know that we live in a world that can be counted on—which obeys laws. During the Dark Ages following the Greek civilization there were a thousand years through which credulity in all forms of magic and witchcraft prevailed. People thought themselves in a world governed by the whims of demons and angels. We owe to science the rescue of Western civilization from these superstitions. Galileo's studies of dynamics as well as his telescope showed that facts were to be found by observing nature rather than by searching ancient writings. Newton's success in solving the riddle of the planets established in men's minds the fact that we live in a world of law.

Guided by the truths of physics, the inventor and the engineer have freed us from much of the slavery of physical drudgery. Medical science has gone far in freeing us from disease and pain, and has greatly lengthened the span of life. Seeing these successes of science as supplied to other aspects of nature, men willingly control their lives in accord with the laws of hygiene, and a healthier

(*Continued on Page 20*)

An End To Unemployment

Unemployment Reserves, Socially Desirable Projects, a Permanent Efficient Public Works Administration, and a Nation-Wide System of Employment Offices Constitute Our Lines of Defense

By Ralph E. Flanders

Reprinted with permission from September Issue of Mechanical Engineering

WHY not an end to unemployment? There is an astonishing mass of useful work to be done, and there is an abundance of natural resources, organization, and equipment for supporting the workers. Why temporize longer with the problem? Instead of devoting our effort and enthusiasm to subsidiary and unrelated policies, why not squarely face the central enigma, modifying and developing our detailed plans in accord with that face-on view?

At the outset we must recognize the problem of unemployment as being a permanent one. This is true for four reasons:

First, there are some of our citizens who, through faulty inheritance of intellect or character, are unable to render effective service in a society organized for a high standard of living. In a primitive society they would more nearly hold their own; but they must either be carried as a deadweight by any highly organized social group, or must be content to live in the social backwaters, whether of the city or country, until progress is made in solving the special problem which they present.

In the second place, we must recognize that in the adjustments of a growing and improving industrial order there continuously arise conditions under which workers find themselves attached to inefficient businesses or decaying industries. It becomes necessary for them to detach themselves and seek new connections elsewhere. There are thus many unemployed even in good times, since the number of those who are on the move from hopeless jobs to hopeful ones is always large, and the new connection cannot always be made at once. Seasonal unemployment adds to the total.

There is a third type of unemployment, new to us, developed by trades-union policy and social theory through the codes of the NRA. This is the gradual prohibition of gainful occupations for youths. The codes in general set the minimum age at sixteen; but restrictions as to "dangerous" occupations (with the term so liberally construed that few of them are as hazardous as driving a motor car) close many avenues of employment to those under eighteen; and there is no doubt that strong influences are at work looking to the age of twenty-one as the minimum at which idleness ends and self-support begins. The situation is all the more serious from the fact that it has come upon us at a time when appropriations for education have been cut to the quick, and before satisfactory types of education have been developed to fit the needs of these new unemployed.

Finally, we must be resigned to some measurable amount of increase and decrease in business as a whole. The business cycle will continue. The rhythms of industry are as inevitable, and may be as invigorating, as the rise and fall of the ocean tides. These variations need not and must not be so great as to be destructive, as has been the case in the past; but it is foolish to set as our ideal the lifeless level of the Dead Sea. We must therefore plan for repeated periods in which unemployment increases somewhat above the normal resulting from the preceding causes.

The provisions which we set up for relieving unemployment should therefore be continuous, on a considerable scale, and subject to periodical expansion.

Three Types of Defense Against Unemployment

For these varieties and causes of unemployment we may well consider three types of defense, variously suited to varying conditions. For the moment we will lightly free ourselves of concern as to the cost of financing them.

The first line of defense is the setting up of unemployment reserves, often miscalled "unemployment insurance."

To be morally justifiable and socially safe, unemployment benefits derived from such reserves should be limited in duration, extending for the maximum of eight or ten weeks which would be required to find a new job under ordinary circumstances. The system must be country-wide, in order that socially progressive areas may not be handicapped in competition with backward ones.

In addition, the method of investing these reserves in good times and liquidating them in bad times must be very carefully studied and specified, for on a nationwide scale the wrong policies would render depressions inevitable and intensify their severity, thus spreading the disease it is intended to cure.

For more prolonged unemployment, and for the third class of unemployed youths, a second line of defense is needed. It must be capable of rapid expansion and contraction while maintaining efficiency of operation. It must produce useful results in return for continued subsistence. It must have in it such socially desirable elements as will permit its use for extended periods without weakening the will and ambition of those whom it helps. It must not offer such wages that it will be preferred on this score to private employment. Little more than subsistence for the worker or his dependents should be offered.

More than a generation ago the Harvard philosopher, William James, wrote the most discerning

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ENGINEERING AS A PROFESSION

From the Engineering Journal of August

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ON this side of the Atlantic the term engineer suggests to the ordinary citizen either an experienced railway man who drives a locomotive, or a youth in khaki who peers through a three-legged telescope and whose mysterious activities finally result, somehow, in the construction of an enormous dam or bridge. The public in fact is hardly aware that engineering is a profession. It is therefore reasonable to enquire just what is a professional engineer and what is implied by the word profession as applied to engineering.

There are a multitude of occupations whose practitioners claim the title of engineer; some of these can properly be classed as professional work, while in other cases the claim is put forward by a man who has had no training as an engineer in an endeavour to obtain a status or consideration to which his technical requirements and occupation do not really entitle him.

In discussing this matter, reference is often made to two of the "learned" professions, law and medicine, and engineers sometimes feel a slight tinge of envy when they note the manner in which lawyers and doctors (to say nothing of architects) have been able to regulate their professional activities and their relations with the public. They have undertaken certain duties towards their clients and have justly obtained certain rights and privileges which are duly safeguarded. The engineer asks himself to what extent is it possible or desirable to build up a like system for engineering work, with the two-fold aim of protecting the public against incompetent practitioners and protecting the members of the profession against improper or unfair competition.

Such a system necessarily involves the establishment of an approved standard of general and professional training, and adequate control of the right to practise.

In Canada much has already been done along these lines, but much remains to be accomplished. The Engineering Institute of Canada, like most other societies of similar standing, has insisted upon certain educational and professional qualifications before membership is granted, and has emphasized the value of systematic training and a high standard of professional attainment. The Professional Associations have continued the work by obtaining, in some of the provinces at any rate, adequate powers to give legal authority to requirements of the kind. Progress is being made, but is necessarily slow, by reason of many difficulties, some external to the profession, and others due to the very nature of engineering work.

In framing any scheme for the regulation of our professional work, consideration has to be given to such matters as the great diversity of engineering activities, the various kinds of training required for their successful prosecution, the engineer's relation to the employers or clients for whom he acts, and the extent to which his work is specialized. It must not be forgotten that in order to be successful, his efforts must always meet definite financial requirements. In some cases, for example, his services are performed for the purpose of selling engineering materials or equipment, his training and experience enabling him to advise the purchaser as to the selection he should make to obtain the best and most economical results. It will be seen that in many aspects of the engineer's work, his profession differs essentially from that of the lawyer or medical man, for the engineer is always limited by economic considerations, and he deals with materials and their utilization, rather than with people and their troubles and difficulties.

An admirable survey of the many problems relating to engineering as a profession was given by the President of the American Society of Civil Engineers at the Annual Convention of the Society which has just been held in Vancouver together with The Institute's Western Professional Meeting. President Eddy's address* points out that a profession has been defined as a vocation characterized by specialized educational training, which has for its purpose the supply of disinterested counsel and services in return for a definite compensation, "apart from expectation of other business gain." He enquires as to how far engineering, as practised today, complies with these requirements, and comes to the conclusion that engineering is certainly a profession in the sense contemplated by the definition, and further, that in view of the dependence of the engineer's work upon the application of so many sciences, it may fairly be regarded as a learned profession. Taking his own special branch as an example, Mr. Eddy remarks that the sanitary engineer has recourse to hydrology, chemistry and bacteriology for information as to the quantity of a water supply; to hydraulics and applied mechanics for the design of his structures; to metallurgy, soil mechanics and many other branches in connection with others of his problems. The trend today is towards an ever-increasing application of scientific knowledge and the utilization of the results of research, and this applies to all branches of engineering.

These increased demands on the engineer's scientific knowledge have involved marked development in engineering education, and post graduate work, either scholastic or extra-mural, is now "a necessity for one who is to secure more than mediocrity in engineering."

Many engineers exercise both technical and business functions, which are not easy to separate. A contractor, for example, may function as an engineer in planning his methods of handling construction, while carrying on the business of

(Continued on Page 23)

A New Approach To The Housing Problem

Proposals to Encourage Building

By Chas. T. Littleton

It is widely accepted that the building industry holds the key to this country's recovery from the depression of the past five years. Until construction is once more under way with its attendant, far reaching re-employment, increased demand and purchasing power for the products of capital industry, America still has a long way to go in order to achieve normalcy.

Hand in hand with the current impasse within the building industry, is the appalling fact that thousands of engineers and architects are unemployed. Estimates of the number of these professional men at present idle, vary between 75% and 98%. Many of them, on the various projects of Work Relief are engaged in occupations which do not make full social use of their technical training and abilities. At the same time, the data obtained from the Real Property survey and the other surveys now being completed, present an undeniable picture of vast parcels of real estate rapidly deteriorating into the status of slum areas. This has been due to two main causes. The first is the lack of low-priced housing and the prevalence of wide-spread poverty, with their resultant overcrowding in those sections available to diminished pocketbooks. The second cause has been the hesitation on the part of property owners towards spending money for much needed renovations. Their attitude may well be understood in view of the condition of the real property market. Also, the difficulty of obtaining the necessary money played an important role in the creation of the down-at-the-heels appearance of our principal cities.

The question naturally arises as to how these facts are to be correlated and by what catalytic agent those three important elements: available technical skill, demand for dwellings, and the requisite financing, are to be brought together and synthesized into a really workable building program. Through the good offices of the Housing Authority, it was hoped that some measure of new construction would get under way. But at best, two years would pass before the full force of the present planning would be felt, while in the meantime the relief burden of our large cities continues to grow to stupendous proportions.

The answer to the problem is simply this: make use of that universal human desire to obtain something for nothing. It is therefore, proposed in line with President Roosevelt's renovation program, that an organization be set up for the purpose of furnishing technical aid for owners by which their property may be renovated and rehabilitated.

The first dissenting voice is now heard. Has not the government its fingers in enough pies without also going into the Engineering business? The answer is that the Government is not intended to go into the Engineering business. It is simply proposed that the board, authority, commission, or whatever it may be called, farm out the work to accredited licensed Professional Engineers and Architects at fees commensurate with the jobs. They in turn are to employ the necessary help from the present work relief rolls at salaries according to the men's experience and abilities. In no way will this work differ from an ordinary commission, except that the entire cost is to be met by the government.

The property owner in turn, upon receiving the plans which have been filed for him gratis, with the Tenement House Department, obligates himself to commence actual building operations at the earliest possible date which has been specified in the agreement. Should he fail to do so, he may be charged for the engineering work that has been done. Arrangements must be made with banks to make the money available to finance the proposed operations on the recommendation of the Engineer or Architect in charge.

This method of attack need not necessarily be limited to the rehabilitation of existing houses. Similarly, Limited Dividend Corporations may be encouraged to engage in Model Housing projects on the basis of having their design and supervisionary costs met by the government. If, at the same time, money is made available at a moderate rate of interest, there is no reason why slum clearance should not get under way without the municipalities engaging in the actual business of operating tenements. The American public for the most part, fights shy of putting such an instrument of potential graft into the hands of some of our none too savory city governments.

But by far the best argument in favor of this plan is the improved condition of city finances which will naturally result. Taking a building that is at present uninhabitable and in arrears as far as taxes are concerned and remodelling it so that it may once again be an economic asset, should do much to ease the present widespread municipal bankruptcy. At the same time, a vast amount of both skilled and unskilled labor should be absorbed in construction with the resulting easing of relief burdens. No other method thus far advanced, would return as much for the money actually spent.

When we consider that the average architect's fee varies between 6% and 10% of the entire cost of construction, it requires no great mathematical knowledge to deduce the vast amount of purchasing

(Continued on Page 23)

SAVE THE ENGINEER

A Job For the New National Society

By J. J. Del Bourgo

A GROUP of professional engineers representing several state and national organizations met recently in a conference the purpose of which was to devise a means of saving the engineering profession from threatened destruction. Due to the splendid cooperation among these leaders and to the urgent desire for speedy and effective action, the conference was a signal success: there resulted a definite plan for the formation of a new national society—*The National Society of Professional Engineers,* with headquarters at Washington, D. C. This new society will unify existing state professional engineers' society units and encourage the formation of new groups where no units exist.

Of course, the mere unification of existing societies and the formation of new ones are only the means to the desired end, namely, *that the public will recognize professional engineering as a profession entitled to the same prestige and dignity as any other.* Until this is accomplished, we can not say that the society has succeeded; and unless everything possible is done to accomplish this, we cannot justify the formation of another society.

The engineering profession faces annihilation. This does not mean that engineering activities will cease: they cannot, for they are vital and essential to civilization. But engineering can cease to be a profession, and engineers may perform engineering functions, not as professional men who serve the public and humanity, but as hirelings who serve their employers for the lowest price at which their employers can get them. A bank president, who knows nothing about a typewriter, tells a stenographer what to write and approves or criticizes her work. A lawyer, for example, who knows nothing about a machine, may be the one to tell an engineer what to design and how to design it and approve or criticize his work.

The engineering profession may be likened to a bull in an arena that is already faint from exhaustion and loss of blood. He can no longer stand and lies helpless on the sand amidst his enemies that make a living on him while the matador approaches to put the finishing stab that will draw the cheers of the crowd in the stands. The matador—it means killer in Spanish—is the New Deal, which is brandishing its shining sword, the Federal Emergency Relief Administrations, and is ready to strike to the cheers of the public, which has long been accustomed to the idea that adequate compensation for engineers is unnecessary.

The first job of the National Society of Professional Engineers is to stop the murder and revive the bull.

How, precisely, is the killing being done? Read.

On November 9, 1933, the President of the United States by an executive order created the Federal Civil Works Administration "for the purpose of giving full-time employment to 4,000,000 persons in the shortest possible time." This purpose was accomplished. During the week ending January 18, 1934, there were 4,075,000 persons employed by the CWA.[1] The bulk of these employees were working on projects which public organizations, like the engineering departments of states, counties, and municipalities, created and for which they applied to the CWA for labor and materials. Most of these projects were engineering projects, such as repairs to existing, or construction of new, highways, bridges, sewers, waterworks, public buildings, etc. They were directed or supervised by engineers employed by the CWA.

The public organizations that were benefiting from the CWA at the expense of Uncle Sam soon discovered that getting free CWA help for whatever they wanted done was considerably cheaper than the old-fashioned way of paying salaries for their help, so they continued the laying-off of such of their regular employees as had previously escaped the ax and applied for CWA help. Regularly employed engineers who held jobs under Civil Service rules lost them and were compelled to seek CWA work. Some came back to work at considerably reduced wages, on the same jobs from which they were laid off. Some municipalities that formerly employed consulting engineers to do their work now found it unnecessary:—why should they pay consulting engineers' fees when Santa Claus is on the job furnishing them free engineers as well as labor and materials? The heartbreaking result has been that many engineers who for years made a living by serving public organizations lost their means of livelihood, closed or were dispossessed of their offices, and starved or sought CWA jobs at from $24 to $36 a week.

As soon as the havoc to the engineers was apparent, some of the engineering societies, including the American Society of Civil Engineers, made protests to the Administration and efforts to induce the Administration to pay the engineers in the CWA wages consistent with their responsibilities in order to eliminate the cut-throat competition. But all protests were answered by evasions, or not answered at all. The writer personally wrote insistent complaints to the Administration, all of which were answered with evasions. To a complaint pointing out for the third time the incalculable injury that the CWA was causing engineers and respectfully requesting just consideration, the reply was a form letter expressing great satisfaction that the CWA meant so much to him.

The crowning injustice came when the Administration announced that all CWA workers would be paid at the "prevailing rate of wages," bringing about a condition in which steel-workers, brick-

(*Continued on Page 23*)

ITEMS OF INTEREST

State Activities

News, Reports, Information

PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS

Adopts Constitution and Code of Ethics

Patterns After New York

The formation of the Pennsylvania Society of Professional Engineers has been undertaken in a manner that commends itself to all professional state organizations.

New York is to be complimented in having furnished much of the Constitution of its sister society. A real tribute is to be found in the incorporation of the Preamble of the Empire State body in that of the Pennsylvania Society.

Excerpts from the Constitution, together with a code of ethics are printed herewith.

Worthy of commendation and emulation is the rise of formal and dignified phraseology in matters of application and incorporation. Such practice will command respect from non-engineers. It is from the layman that the engineer must seek respect.

PREAMBLE

Concerned **with the Public Weal of the Commonwealth of Pennsylvania, and**

In Order **to safeguard life, health and property, by restricting the practice of Engineering to properly qualified persons;**

Likewise **to advance the welfare of the Engineering Profession by establishment, observance and enforcement of high ethical standards of conduct, and through sponsorship of the creation and enforcement of adequate license laws and practice acts, to afford means of united punitive action against unlicensed and unethical practice;**

Also **to place the control of engineering projects within the scope of such laws and acts;**

Further **to focus attention of the public upon the functions, requirements and accomplishments of engineers;**

Withall **to sponsor and promote honorable procedure tending toward recognition commensurate with the dignity and responsibilities of the Profession,**

PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS has been organized, and to such ends, the CONSTITUTION, of which this PREAMBLE is a part, is hereby set forth.

ARTICLE I

NAME

Section 1. The name of this association shall be "Pennsylvania Society of Professional Engineers."

ARTICLE II

HEADQUARTERS

Section 1. The principal office shall be located in Philadelphia and shall

(Continued on Page 13)

NEW YORK STATE BOARD OF EXAMINERS

Annual Report — 1934
By Roy G. Finch, Secretary

During the year ended June 30, 1934, the State Board of Examiners of Professional Engineers and Land Surveyors held 10 meetings and considered 1125 applications for licenses, of which 250 were rejected, 348 held for written examination, 110 held for further consideration, and 417 recommended for licenses. During the previous year 1060 applications were considered, of which 217 were rejected, 259 held for written examination, 129 held for further consideration, and 455 recommended for licenses.

Written examinations were held January 29th to February 1st, and June 25th to 28th, 1934. One hundred thirty-three persons appeared for the January 29th-February 1st examinations, submitting 175 papers. This examination resulted in the rejection of 27 applicants, the holding of 4 applicants for re-examination in one subject, and the granting of licenses to 102 applicants. At the June 25th-28th examinations 222 persons appeared, submitting 322 papers, which resulted in the rejection of 53 applicants, the holding of 4 applicants for re-examination in one subject, and the granting of licenses to 165 applicants. During the fiscal year ended June 30, 1934, it will be noted, 355 persons tried the written examinations in one or more subjects. During the year ended June 30, 1933, the record shows that 185 persons tried the written examinations and during the year ended June 30, 1932, only 42 persons tried these examinations. The number and percentage of applicants for licenses who are required to take written examinations are increasing.

During the fiscal year ended June 30, 1934, the net amount received from fees was $29,186.00, and the expenditures made to June 30th were $14,223.11, leaving a surplus of $14,962.89 subject to certain outstanding obligations. Similar figures for the previous year show Receipts $22,955.30, Expenditures $16,294.41, Surplus $6,660.89.

During the year covered by this report no charges have been submitted to the Board seeking the revocation of licenses heretofore granted.

No amendments to the law were made during the 1934 session of the Legislature. The last amendments were those enacted by the Legislature at the 1933 session.

Upon recommendation of the Board a change will be made in the written examinations beginning with the January, 1935, examinations. Under the present arrangement examinations are given in 6 subjects, requiring 3 days, and on the 4th day are held the exam-

(Continued on Page 14)

CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS

Adopts Constitution and Elects Officers.

Applies for Membership in National Society.

On Friday, August 31st, the newly organized Connecticut Society of Professional Engineers was launched at Stamford.

The following officers were elected:

Willard S. Conlon, President; Harry E. Harris, 1st Vice-President; Z. F. Cappabianca, 2nd Vice-President; F. M. Brown, Secretary; C. S. Wendell, Treasurer.

At the meeting of the National Society of Professional Engineers held in New York on Labor Day Connecticut presented the first application for State membership. The application was approved subject to ratification of the Connecticut Society.

Excerpts from the Constitution follow:

PREAMBLE

Service to Society, to State, and to Profession through united action, is the objective for which the Connecticut Society of Professional Engineers is hereby created and it does herewith dedicate itself to the promotion and protection of the profession of Engineering as a social and economic influence vital to the affairs of men and the State of Connecticut.

ARTICLE 1

NAME

The name of the organization shall be "Connecticut Society of Professional Engineers."

ARTICLE 2

OBJECTS

To represent the united engineering profession in the State, to advance and protect the economic and professional interests of the engineer through united effort, legislation, and public relations; to unite, coordinate and extend the activities of such chapters as may be created.

ARTICLE 3

HEADQUARTERS

Such place as may be designated by the Board of Directors.

ARTICLE 4

CHAPTERS

The Society, through its Board of Directors, may authorize and charter one chapter in each of the following towns or cities; where expedient, two or more cities or towns may combine for the purpose of the organization of one chapter.

Original Chapters: Bridgeport, New

(Continued on Page 14)

EXAMINATIONS FOR LICENSES

New York State

June 25th — 29th

EXAMINATION QUESTIONS
For Professional Engineers

Part II
ELECTRICAL ENGINEERING
(Second half)
Thursday, June 28, 1934—1:15 to 4:15 p. m., only

Answer any five of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 State and explain the points of superiority of the three-phase system of power distribution over the other systems that are in commercial use.

2 *a* Why are service circuits (in circuits feeding utilization devices) always required to be grounded? What, in your opinion, constitutes a voltage value that might be classified as hazardous? What installation conditions or circumstances would increase the hazard to life?

b In connection with motors and generators mention *three* safety devices that should be employed to safeguard the workman.

3 A single-phase synchronous motor for use on a 500-volt circuit gives, when running as a generator, a short-circuit current of 150 amperes with normal excitation applied. The armature resistance is 0.2 ohm. What must be the excitation voltage in order to develop 40 horsepower at unity power factor? What will be the armature current? The mechanical loss is 5 horsepower at the terminal voltage of 500.

4 The no-load armature current of a 220-volt shunt motor is 3.0 amperes, the no-load speed is 950 r. p. m. and the total resistance of the armature circuit, including brushes, is 0.2 ohm. If the motor is loaded, the field flux reduced 15% and a resistance of 2 ohms inserted in the armature, the speed is 609 r. p. m. What is the armature current and the total developed or electromagnetic torque in pound feet?

5 A shunt generator refuses to build up its voltage to the normal value. Enumerate the possible causes for this failure. Discuss how to test for *each* of these possibilities and how to remove the cause.

6 A four-pole series motor has a saturation curve given by the following figures:

Amperes in field	10	20	30	40	50	60	70	80	90
Flux per pole in megalines	.29	.55	.74	.85	.92	.97	1.01	1.06	1.08

The armature is wave wound, has 820 conductors, and the total resistance of the armature circuit and series field is 0.15 ohm. If a terminal voltage of 230 is applied and the motor takes 45 amperes, calculate (*a*) *speed*, (*b*) torque developed in pound feet.

7 *a* Describe the split-conductor differential system of protection for internal failures of large turbo-alternators. Enumerate the important advantages and disadvantages of this scheme of protection.

b Describe the operating principle of the impedance (distance) relay used in the automatic sectionalizing of electrical networks.

8 Describe the electrical arrangement of apparatus and the circuits involved in the modern low-voltage, alternating-current power distribution network system. What are the main functions of the network relay?

9 *a* Give the circuit of a vacuum tube used as an amplifier and explain its operation.

b Sketch its characteristic curves and explain why their shapes are as drawn.

c Indicate by a diagram how the amplifier unit is employed on a telephone line for transmission in either direction.

10 *a* Name a multiplex system of telegraphy, explain its operation and give its usual application.

b Explain the advantages of a balanced type of telephone receiver over the simple bipolar type.

Part II
MECHANICAL ENGINEERING
(First half)
Thursday, June 28, 1934—9:15 a. m. to 12:15 p. m., only

Answer any five of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.
Return at 1:15 p. m. for the second half of this examination.

1 *a* Compute the horsepower that is being transmitted by a belt under the following conditions:
Driving pulley—84 inches diameter
Driven pulley—48 inches diameter
Speed of driving pulley—1500 revolutions per minute
Tension on tight side of belt—300 pounds
Tension on loose side of belt—100 pounds

b What is your opinion of the operating conditions under the data as given in part *a* of this question?

2 What are the desirable characteristics of a good cylinder lubricating oil for a Corliss engine? With a good oil, what usage requirements must be met to assure good lubricating conditions?

3 A gasoline engine tested by a hydraulic dynamometer produced the following test data:
Revolutions per minute—3200
Platform scale reading—120 pounds
Length of dynamometer lever—42 inches

a What horsepower was developed by the engine?

b Assuming that the duration of the test was one hour, state what became of the energy produced by the engine.

4 *a* Describe the various general types of cams with which you are familiar and tell the uses or advantages of each type.

b It is desired to actuate a reciprocating head with the smoothest possible acceleration and retardation. How would you lay out a cam to accomplish this and what natural law would you apply?

5 *a* What is a process flow diagram of a manufacturing plant? What is its purpose and use?

b Describe brieny some wage or financial incentive systems with which you are familiar and point out the outstanding characteristics of each.

6 *a* In foundry practice, what is meant by *each* of the following: drag, cope, green sand core, sprue, gated pattern, matchboard pattern?

b What is the approximate composition of a good gray cast iron?

7 A test of an induced-draft fan showed the following data:
Fan outlet area—10 square feet
Velocity head at fan outlet by Pitot tube—0.7 inch of water
Gas temperature—400° F.
Static pressure difference across fan—5.0 inches of water
Velocity head in fan inlet connection—0.0
Power input to fan—75.0 horsepower
What is the mechanical efficiency of the fan?

8 *a* What is the advantage of the riveted double strap butt joint over every form of riveted lap joint?

b A riveted boiler joint of the double strap butt type has the following dimensions:
Pitch of rivets—3 inches
Diameter ir rivets—⅞ inch
Number of rows—1
Thickness of plate—0.375 inch
Ultimate tensile strength—50,000 pounds per square inch
What is the efficiency of the joint?

c What will be the effect of an additional row of rivets each side of the shell joint described in *b*?
Pitch of second row—6 inches
Diameter of rivets—⅞ inch

9 *a* Define the term *boiler horsepower.*

b Determine the required capacity of a direct-acting single-cylinder steam pump to supply water to a boiler that furnishes steam for a 300-kilowatt turbine operating at 250-pound gauge pressure and exhausting to the atmosphere.

10 Calculate the horsepower of a cross-compound steam engine with Corliss valve gear under the following conditions:
Steam pressure—150 pounds guage
High-pressure cylinder—31 inches diameter
Low-pressure cylinder—48 inches diameter
Piston rod—4 inches diameter
Revolutions per minute—100
The high-pressure cylinder indicator cards showed a mean effective pressure of 80 pounds; the low-pres-

sure cylinder indicator cards showed a mean effective pressure of 32 pounds.

Part II

MECHANICAL ENGINEERING

(Second half)

Thursday, June 28, 1934—1:15 to 4:15 p. m., only

No reference books or notes may be used. Return this sheet with your answer papers.

Select some engineering project that you have designed or helped to design or that you have had responsibility in constructing, write a complete description of it, giving figures, details, sketches, etc., and describe the engineering problems you had to solve and how you solved them. As far as possible, write in a professional manner, using technical and engineering terms, and in a footnote, where you consider it necessary, define these terms so that a layman will understand their meaning. Give figures, quantities, dimensions, details and sketches, as necessary, describing engineering problems you faced and your solution of them. In case you have been interested in an investigation or in some engineering research, you may select this as your subject.

Remember that you have three hours for this paper, so take plenty of time in planning what you wish to say and in determining the order of presentation, and then write your paper carefully.

Part II

CIVIL ENGINEERING (First half)

Thursday, June 28, 1934—9:15 a. m. to 12:15 p. m., only

Answer any five of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

Return at 1:15 p. m. for the second half of this examination.

1 Define the term *water hammer.* Give the cause of water hammer and state how it may be prevented.

2 Describe (*a*) a typical pneumatic caisson, (*b*) a typical open caisson with dredging wells. Discuss circumstances and limitations of the use of each type.

3 It is required to discharge 25 cubic feet of water per second into a reservoir 400 feet above and 3 miles distant from a pumping station. A main 30 inches in diameter connects the pump and the reservoir. There are 10 bends in the pipe line. The coefficient of resistance due to friction is 0.012. The coefficient of resistance at entrance is 0.42, and the value of the coefficient for each bend is 0.85. What size of electric motor should be installed if the pump has an efficiency of 85%?

4 Describe an Imhoff tank and state its use. Illustrate by sketch.

5 Show a typical cross section of a stone-block pavement, including curbs and base. The pavement is 40 feet in width. Give measurements and general requirements for materials and for construction.

6 Define the following: (*a*) British thermal unit, (*b*) specific heat, (*c*) latent heat of fusion, (*d*) thermal conductivity, (*e*) mechanical equivalent of heat.

7 A plate girder 60 feet in length is composed of a web plate 72 inches by ½ inch in cross section, 2 flanges, each made up of 2 angles 6 inches by 6 inches by ⅞ inch, and cover plates, together with the necessary stiffeners. The loading, adjusted for the weight of the girder itself, is as follows:

12 feet from the left support, 80,000 pounds.

24 feet from the left support, 100,000 pounds.

36 feet from the left support, 110,000 pounds.

48 feet from the left support, 90,000 pounds.

Determine the number and the dimensions of the necessary cover plates. Show your calculations.

8 A reinforced concrete beam is 14 inches wide and 22 inches deep. The tension reinforcement consists of four ¾-inch square bars. The clear span is 16 feet, noncontinuous, and the uniformly distributed load, including the weight of the beam, is 24,000 pounds. Assuming that the effective depth is 20 inches and the $n = 15$, determine the unit compressive stress in the concrete and the unit tensile stress in the steel.

9 An overflow masonry dam is 10 feet wide on top, with vertical back, and 30 feet wide on the bottom. The dam is 50 feet high and the water is 8 feet deep on the crest. Show whether or not the dam is stable. (Take the weight of masonry at 140 pounds per cubic foot and the coefficient of friction at 0.75.)

10 A Venturi meter is installed in a water main 36 inches in diameter. The throat diameter is 12 inches. The piezometer tubes at the entrance and at the throat show readings of 24 feet and 8 feet respectively. Calculate the flow through the meter in cubic feet per second.

Part II

CIVIL ENGINEERING (Second half)

Thursday, June 28, 1934—1:15 to 4:15 p. m., only

No reference books or notes may be used. Return this sheet with your answer papers.

A construction project includes concrete in dock walls (fresh water) estimated to cost $500,000. The principal item in the proposal covering concrete is: "First-class concrete (1:2:4 mix)." Write specifications for this item under the following headings:

Fine aggregate; Coarse aggregate—broken stone; Proportions by weight; Consistency and water content; Depositing in the dry; Depositing under water; Provisions for concreting in cold weather; Bonding construction joints; Finishing surfaces; Waterproofing.

These specifications should be definite and of such a character that there will be a minimum of disagreement between the contractor and the engineer concerning materials, construction methods and the quality of the work covered by this item.

Part I

MATHEMATICS

Thursday, June 28, 1934—9:15 a. m. to 12:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 The earth's equatorial radius is approximately 3963 miles. If two points on the equator are 1000 miles apart, what is their difference in longitude?

2 A tank can be filled by one pipe in 30 minutes, by a second pipe in 40 minutes and by a third pipe in 50 minutes. How long will it take to fill the tank with all the pipes running?

3 Find the equation of the circle passing through the point (5, 6) and having its center at the intersection of the lines $y = 7x - 3$ and $4y - 3x = 13$

4-5 An open cistern is made of iron 2 inches thick. The inside dimensions are: length 4.5 feet, width 3.0 feet, depth 2.5 feet. What will the cistern weigh (*a*) when empty, (*b*) when full of water? (Take the weight of water at 62.5 pounds per cubic foot and the specific gravity of iron at 7.2.)

6 Find by logarithms the value of

$$\sqrt[6]{0.07256}$$

7-8 A triangular lot has one side 285.4 feet long. The angles adjacent to this side are 42° 22′ and 31° 19′. Find the area of the lot and the length of a fence around it.

9 Solve the equation $2 \sin^2 x + 5 \sin x = 3$

10 Two stations, *A* and *B*, on opposite sides of a mountain, are both visible from a third station, *C*. $AC = 11.5$ miles, $BC = 9.4$ miles and the angle $ACB = 59° 31'$; find the distance from *A* to *B*.

11 The frustum of a right circular cone 14 feet high has a volume of 924 cubic feet. Fine the radii of its bases if their sum is 9 feet.

12 In a certain rectangular garden there is a strawberry bed each side of which is one-third of the length of the corresponding side of the garden. The perimeter of the garden exceeds that of the bed by 200 yards. If the longer side of the garden is increased by 3 yards and the other side by 5 yards, the garden will be enlarged by 645 square yards. Find the length and breadth of the garden.

Part II

LAND SURVEYING

Thursday, June 28, 1934—1:15 to 4:15 p. m., only

Answer any eight of the following questions. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 Balance the following survey:

Station	*Distance in feet*	*Bearing*
A	115.3	N. 80° 30′ E.
B	69.5	S. 9° 13′ W.
C	113.9	N. 64° 10′ W.

2 Define *each* of the following: plus sight, height of instrument, datum, azimuth, stadia constant, ranging in, line of sight, contour interval, witness point, magnetic declination.

3 The area of an irregular field as determined by the use of a Gunter's chain, afterward found to be one link too long, was 17 acres. Find the true area.

4-5 A tract of land in the Town of Bolivar, Smith Co., N. Y., was conveyed by John Jones and wife to

Mary Roe by deed dated June 16, 1862, under the following description:

"Beginning at a stake in the center of the road from La Porte to Amity, thence along the center of said road N. 68 degrees, 45 minutes E., 10 chains, 61 links to a stake; thence along a line 18 chains, 18 links in length to its intersection with the meridian through the point of beginning, south of said point; thence due East to the intersection of this course with the meridian drawn through a point 12 chains, 12 links due East of the east end of the first course; thence Southeast, 15 chains, 15 links to the shore of Moose Lake; thence N. 12 degrees, 45 minutes E. to the intersection of this course with a due East and West line drawn through the point 3 chains, 79 links north of the east end of the first course; thence due West to the meridian passing through the point of beginning; thence due South to the place of beginning, containing 78 acres, more or less. All bearings are as the compass pointed in 1819."

The boundaries were located by a resurvey and found to be in reasonable conformity to the description. However, it was discovered that the area in the description was too great by 5.558 acres.

Write a description for conveyance, giving bearings in degrees and minutes referred to the true north, and distances in feet and tenths, for every course, identifying the property as the same as covered by the description in the conveyance of 1862. Assume that the magnetic declination was 6° 15′ West in 1819.

6 An upland property has approximately 2000 feet of shore line. The owner desires to acquire the adjacent lands under water to a distance of 1000 feet out from the shore line and wishes to improve these lands by filling. Describe how you would make a topographical survey of these lands under water.

7 A licensed land surveyor has been employed by an owner to relocate a disputed boundary line between two pieces of farm property. State *in order* and discuss briefly each step that should be taken by the land surveyor in doing this piece of work.

8 A base line was run in a general westerly direction. An observation on Polaris at Sta. 875 fixed the azimuth of the course between Sta. 860 and Sta. 875 at 268° 8′ 30″, which was used in running the base line to Sta. 1191 + 80. Another observation on Polaris at Sta. 1191 + 80 fixed the azimuth of the course between Sta. 1177 and Sta. 1191 + 80 at 268° 1′ 30″.

Assuming that the correction for convergence of the meridians is 50 seconds per mile of westing or easting and that the westing or easting is 80 per cent of the course distance between stations of observation, determine the error in azimuth due to running the base line.

9-10 The stadia hairs of a transit intercept 8.36 feet on the stadia rod, and the vertical angle, when the line of sight intersects the rod at a height equal to the height of the instrument, is 21° 37′. The stadia constant is 100, and the instrument constant is 1.04 feet. (*a*) What is the horizontal distance of the rod from the center of the instrument? (*b*) What is the difference of elevation between the center of the transit and the point where the line of sight intersects the rod, as indicated by the center cross hair?

11-12 Discuss (*a*) the significance and authority of monuments in land surveys, (*b*) the powers and duties of a land surveyor with respect to lost monuments.

* * *

Items of Interest

PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS

(Continued from Page 10)

be designated as "State Headquarters."

ARTICLE III

CHAPTER

Section 1. The Society may authorize and charter not more than one chapter in each county in Pennsylvania and also chapters to accommodate non-resident members, provided that large chapters may be subdivided as provided in By-Laws and when expedient two or more counties may be combined for the purpose of organization of one chapter.

Section 2. These organizations shall become effective as soon as the proposed Constitution and By-Laws of any chapter shall have been submitted to and approved by the Executive Board of the State Society.

Section 3. Local chapters shall be designated by the name of the County wherein located, by the name of the city or locality in which it holds its meetings, or other designation to be approved by the Executive Board of the State Society.

Section 4. The functions of the chapter shall be; to confer and suggest as to matters of policy, to cooperate with other chapters and local engineering societies and civic associations in matters of common interest, to study local engineering problems, to encourage members to prepare and discuss papers appropriate to the aims of the Society, and to bring about closer personal acquaintance and a spirit of cooperation between the engineers in the community. They should locally represent and exploit the aims and purposes of the State Society.

Section 5. The written petition of five professional engineers, duly registered under the state law and residing or practicing within the limits of any one county, or where two or more counties are combined, of three such engineers residing or practicing within each of the counties so combined, shall be deemed sufficient to authorize and charter a chapter, said petition to be endorsed by three additional well known disinterested professional engineers.

Section 6. Two or more chartered chapters may merge into one chapter and may be granted a charter upon petition, provided, that a majority of the membership in good standing of each chapter concerned, so petition. Upon issuance of the new charter, the separate charters involved shall be surrendered to the State Society.

Section 7. A chartered chapter which comprises two or more counties may dissolve into two or more separate and distinct chapters, each to be granted charters, provided, that a majority of the members thereof in good standing, residing or practicing in a county desiring a separate charter, so petition. Such majority, however, shall not number less than five. The charter of the combined county chapter shall be surrendered to the State Society upon issuance of the new separate charters.

Section 8. Where counties exist having less than ten registered engineers residing or practicing therein, such areas may be added to the jurisdiction of any existing chapter upon petition therefor to, and approval by, the Executive Board of the State Society. Such procedure shall not affect the name or charter of the existing chapter so joined, nor shall it prejudice the right of future organization of a separate chapter as provided under Section 5, of this Article.

Section 9. Chapters shall be encouraged by the Executive Board to participate in the affairs of the Society. They shall not assume to speak for the Society unless authorized by the Executive Board of the State Society; violation of this rule shall constitute cause to warrant recall of the offending chapter's charter.

Section 10. The Executive Board may annually assign from the funds of the Society, to each chapter, a sum varying in proportion to its needs, not to exceed Two Dollars ($2.00) for each member belonging to that chapter whose dues to the Society are paid.

Section 11. The Executive Board of the State Society shall have jurisdiction in the granting of charters to chapters, in the allotment of jurisdictional areas to chapters and in the allotment of individuals or groups to the chapters.

ARTICLE IV

MEMBERSHIP

Section 1. The Active Membership shall consist only of Professional Engineers licensed or registered under the laws of the Commonwealth of Pennsylvania.

Section 2. There shall be three classes of active membership, contingent upon registration by the State Registration Board for Professional Engineers of the Comonwealth of Pennsylvania, Members paying current dues, Members with dues compounded, and Life Members.

Section 3. All active Membership shall be contingent upon and simultaneous with election to membership in a chartered chapter, except that a non-resident of Pennsylvania or a resident of a county of Pennsylvania not under the jurisdiction of any chartered chapter, may be elected to membership without chapter affiliation until such time as the locality in question is placed under the jurisdiction of some chapter, at which time the member in question shall be bound to accept membership in said chapter.

Section 4. Inactive Members are of a single class, Honorary.

Section 5. Life Members consist of those Active Members in good standing who shall have reached the age of seventy years and shall have paid at least fifteen years dues or compounded for the same; or of those Active Members who shall have paid dues to the Society for twenty years or who have compounded for the same and who in either case shall petition to become Life Members, provided that Active Members compounding their dues shall not become Life Members until the end o. the period for which they have compounded their dues.

Section 6. In case of chapter members, petitions for Life Membership shall originate in and be favorably endorsed by the chapter and shall take effect upon approval by the Executive Board of the State Society. Applications petitioning for Life Membership by non-chapter members shall be acted upon and approved by the Executive Board of the State Society.

Section 7. Honorary Members shall be chosen only from persons who are of acknowledged eminence in some branch of engineering or the arts and sciences related thereto, or who have signally advanced the interests of this Society. There shall not at any time be more than one living Honorary Member for each three hundred living active members. Not more than three Honorary Members shall be elected in any one year.

Section 8. Life Members are exempted from paying dues and from any assessments except the Executive Board may prorate certain assessments among Life Members. They shall be entitled to all the rights and privileges of the Society.

Section 9. Honorary Members shall be exempt from dues and assessments and shall be entitled to all the rights and privileges of the Society except the right to vote and hold office therein, provided, that Honorary Members elected from the active membership of the Society shall retain their right to vote and hold office contingent upon payment of dues.

Section 10. Active practicing of the profession at the time of making application for membership is not an essential requirement for admission.

Section 11. Regardless of Phraseology used herein, membership shall not be contingent upon race, color or sex.

* * * * *

ARTICLE XII

CONDUCT OF CHAPTERS

Section 1. Chapters chartered by the Society shall be governed by this Constitution, and shall draft a Constitution and set of By-Laws in accordance therewith for the conduct of their affairs.

Section 2. The Constitution, By-Laws and Codes of Practice or any amendments thereto, adopted by any chapter shall not become effective until approved by the Executive Board of the State Society.

Section 3. Chapters shall engage in such activities as are consistent with professional ideals and ethics and conducive to public welfare. Such activities shall be restricted to the territory for which the chapter is chartered.

Section 4. It shall be the strict duty of each chapter to transmit to the Society, within thirty days after the receipt by it, that portion of the dues that are due to the State Society; to transmit at once the names and addresses of newly elected, expelled, dropped, or suspended, or deceased members; to transmit at regular intervals for publication a report of chapter progress and activities; and to transmit to State Headquarters notices of all meetings and elections.

Section 5. Authority to expel from membership shall be vested in the Executive Board of the State Society. Actions may originate in the State Society or in a chapter, in which latter case the chapter shall conduct the investigations, hearings and trials and submit the findings thereof to the Executive Board of the State Society for final action.

* * * * *

ARTICLE XV

ACTIVITIES

Section 1. To expedite and facilitate the prosecution of the aims and ends of the Society as set forth in the Preamble to the Constitution, the Society may, by adding appropriate Sections of ARTICLES to the By-Laws, provide for the establishment of permanent headquarters with necessary equipment; of certificates of membership and badges; of medals, prizes, and awards and the administration of funds donated, bequeathed to the Society or appropriated for that purpose; for co-operation with other societies or institutions; for the establishment of a library and the preservation of matter of historical interest or of technical interest; for the election or appointment of representatives of the Society and the delegation of powers in connection therewith; for the promulgation of rules and regulations interpreting and covering all its activities; and in general to take any action found desirable to advance the interests of the Society and its chapters not inconsistent with its Charter and this Constitution.

* * *

NEW YORK STATE BOARD OF EXAMINERS

(Continued from Page 10)

inations in Professional Engineering, divided into two parts and requiring the full day. Under the new plan the time required for the entire examinations will be reduced to 3 days. This will be accomplished by eliminating the examination in Materials of Construction and including questions in this subject on the examination paper for Structural Planning and Design. There will be only one part to the examination paper in Professional Engineering, requiring only one-half day rather than the full day under the present plan. Some changes have been made in the scope of the examinations with a view to restricting the list of subjects covered. No changes have been made in the examinations for land surveying.

The personnel of the Board is as follows:

Davis B. Steinman, Chairman; Erich Hausmann, Vice-Chairman; Roy G. Finch, Secretary; Albert H. Hooker, Virgil M. Palmer.

* * *

CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS

(Continued from Page 10)

Haven, Hartford, New London, Waterbury, Stamford.

ARTICLE 5

MEMBERSHIP

There shall be two (2) grades, Members and Associates.

Members

Section (1) Legally registered or licensed engineers or:

Section (2) Engineers holding certification by the National Bureau of Engineering Registration or:

Section (3) Engineers who would, in the opinion of the Board after review of their qualifications, be qualified for a license, said qualifications as required for certification by the N. B. E. R.

Section (4) All members shall, when state registration law becomes effective, qualify as specified in section 1 or 2 or cease to be members of the society.

Associates

Shall be limited to:

Section (5) Legally registered or licensed Land Surveyors or Land Surveyors qualified for license as approved by the Board.

Section (6) Graduate engineers of an approved school who lack the full four years experience requirement, and/or:

Section (7) Engineers having acquired by training and experience the equivalent of requirements as set forth in section 6.

* * *

ADDITIONAL INVESTIGATORS

State Educational Department Acts

In order to facilitate the prosecution of violations of the Engineering Practice Act the State Education Department has decided to appoint six assistants to the Investigator.

The New York State Society, which has been cooperating in the enforcement of the law, has been entrusted the privilege of recommending the personnel of the additional force.

The Society appreciates the courtesy and commends the Department of Education.

* * *

LAW APPLIES TO RELIEF PROJECTS

Engineers Must Be Licensed

After a year of constant effort to compel compliance with the law, Relief Work Projects have been placed within the scope of the Engineering Practice Act.

The following notice is of interest to all Engineers:

BULLETIN No. 81

August 31, 1934.

TO: All Projects to Which Engineers are Assigned.

FROM: Walter A. DeLamater, Director.

All employees of the Works Division, who as professional engineers are in responsible charge of design and of supervision of work, or who as professional land surveyors are in responsible charge of land surveys, shall be licensed as such under the provisions of the Engineers Licensing Laws, New York State, now constituting Article No. 55 of the State Education Law.

The Engineer in charge of the project to which, by nature of the work, the Licensing Law pertaining to professional engineers applies, shall decide which of the engineers under his jurisdiction are in a position of responsibility and should be licensed to conform to Article No. 55 of the State Education Law. He shall advise these men immediately to apply for licenses and shall send their names to the Chief Engineer.

Mention is made of the services rendered by D. B. Steinman, V. T. Boughton of the Metropolitan Section of the A. S. C. E., and Col. Wm. J. Wilgus, now Director of the Work Relief Bureau of the Department of Public Welfare.

* * *

NATIONAL BUREAU OF REGISTRATION

Certification as Professional Engineer

In view of the membership qualification of the New National Society of Professional Engineers it is deemed desirable to reprint the last Bulletin of the National Council of State Boards of Engineering Examiners.

NATIONAL BUREAU OF ENGINEERING REGISTRATION
Conducted By
NATIONAL COUNCIL OF STATE BOARDS OF ENGINEERING EXAMINERS

BULLETIN OF INFORMATION
September, 1933

Purpose and Administration

The National Bureau of Engineering Registration is operated as a function of the National Council of State Boards of Engineering Examiners, assisted by an Advisory Board of Representatives from seven national engineering societies. It was established primarily for the convenience of engineers, especially those practicing in more than one State, to minimize the effort and expense of securing registration. The Bureau also constitutes a clearing house for the convenience of the registration authorities of the various States having laws regulating the practice of professional engineering and acts as a reliable source of verified information regarding the professional records of engineers.

The Certificates of Qualification issued by the Bureau are in no sense obligatory for the applicant nor binding upon the State Boards of Registration, nor does the Board assume any responsibility to the applicant for securing his legal registration authorizing the practice of engineering in any State. However, the Constitution of the National Council and the engineering registration laws of some states specifically provide for the acceptance of certificates issued by the National Bureau of Engineering Registration.

The following is quoted from the Constitution and By-Laws of the National Council:

"Section 6. Committee on National Bureau of Engineering Registration. A National Bureau of Engineering Registration shall be conducted under the direction of the Committee on National Bureau of Engineering Registration. This committee shall consist of five members; three appointed by the incoming President for terms of one, two, and three years respectively, and at the expiration of these terms one member shall be appointed annually by the incoming President for a term of three years; the Chairman of the Committee on Accredited Engineering Schools; and the Chairman of the Committee on Uniform Examinations for Registration. When the words "Registration Bureau" are used it shall mean the Committee on National Bureau of Engineering Registration. The Registration Bureau shall be assisted in its work by an Advisory Board of representatives appointed by national engineering societies or associations which may be invited by the Council to participate.

"The Bureau Committee shall adopt forms, rules, regulations, and fees for the Registration Bureau. The Registration Bureau shall investigate and verify the professional records of engineers and issue Certificates of Qualification to engineers who comply with its requirements. The Certificates of Qualification shall be issued by the Registration Bureau in the name of the National Council of State Boards of Engineering Examiners and shall be signed by the Executive Secretary. These certificates shall be available as evidence of qualification for registration as a professional engineer with State Boards of Registration, for membership in national and state engineering societies, in connection with the award of professional degrees by engineering schools, for presentation to clients when soliciting contracts for professional services, for presentation to employers when applying for positions, and for similar purposes.

"Whenever legally possible and in the absence of disqualifying evidence, Member Boards are expected to give due consideration to, recognize, or accept as competent evidence of qualification, the Certificates of Qualification when submitted in support of applications for registration, or as reciprocal endorsement when submitted by applicants who are registered with some other Member Board, or as the equivalent of reciprocal registration certificates or cards issued by Member Boards, or as prima facie evidence of qualification in lieu of examination."

The Committee on National Bureau of Engineering Registration is as follows:

Hugh A. Kelly, Chairman, Jersey City, New Jersey; D. B. Steinman, New York City; H. D. Mendenhall, Tallahassee, Florida; P. H. Daggett, New Brunswick, New Jersey; O. Laurgaard, Portland, Oregon; T. Keith Legaré, Executive Secretary, Columbia, S. C.; (Executive Secretary of National Council of State Boards of Engineering Examiners.)

The national engineering societies are cooperating with the National Council, assisting in the development of the usefulness and efficiency of the Bureau, through an Advisory Board on which the following representatives have been appointed:

American Society of Civil Engineers, George T. Seabury; American Society of Mechanical Engineers, John H. Lawrence; American Institute of Electrical Engineers, Walter I. Slichter; American Institute of Chemical Engineers, J. C. Olsen; Society for Promotion of Engineering Education, R. I. Rees; American Railway Engineering Association, R. E. Warden; American Association of Engineers, C. J. Ullrich.

Requirements for Certificate of Qualification

A Certificate of Qualification will be issued only to an applicant who fully complies with any one of the following minimum requirements for a Professional Engineer and who conforms with the other regulations of the Bureau:

A. Graduation from an approved course in engineering of four years or more in a school or college approved by the Bureau as of satisfactory standing; and a specific record of an additional four years or more of active practice in engineering work of a character satisfactory to the Bureau and indicating that the applicant is competent to be placed in responsible charge of important engineering work; or

B. Successfully passing a written, or written and oral, examination designed to show knowledge and skill approximating that attained through graduation from an approved four-year engineering course; and a specific record of eight years or more of active practice in engineering work of a character satisfactory to the Bureau and indicating that the applicant is competent to be placed in responsible charge of important engineering work; or

C. A specific record of twelve years or more of active practice in engineering work of a character satisfactory to the Bureau and indicating that the applicant is qualified to design or to supervise construction of engineering works and has had responsible charge of important engineering work for at least five years and provided applicant is not less than thirty-five years of age.

In passing upon the professional record and experience of an applicant the Bureau will construe "professional engineer" or "active practice in engineering work" as follows:

The term "Professional Engineer"

shall mean a person who, by reason of his knowledge of mathematics, the physical sciences and the principles of engineering, acquired by professional education and practical experience, is qualified to engage in engineering as hereinafter defined.

The practice of professional engineering includes any professional service, such as consultation, investigation, evaluation, planning, design, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works, or projects, wherein the public welfare, the safeguarding of life, health, or property is concerned or involved, when such professional service requires the application of engineering principles and data.

The mere execution, as a Contractor, of work designed by a Professional Engineer or the supervision of the construction of such work as a foreman or superintendent shall not be deemed to be active practice in engineering work.

Fees

The charges for services of the Registration Bureau are as follows:

The fee for investigating and verifying the professional record of an engineer is $10.00, which fee must accompany application and will be retained by the Registration Bureau regardless of whether or not the results of the investigation warrant the issuance of a Certificate of Qualification.

When an applicant for a Certificate of Qualification is approved, the applicant will be so notified by the Bureau and upon payment by him of an additional fee of $5.00 the Bureau will furnish the applicant with a photostatic copy of his verified record and also with a separate Certificate of Qualification suitable for framing.

Additional photostatic copies of verified professional records will be furnished by the Registration Bureau for $3.00 each.

These certified copies of professional records may be sent direct by the Registration Bureau to State Boards of Engineering Registration or other parties designated.

An applicant whose status is classified under provision "B" of the requirements for a Certificate of Qualification and who has not passed an engineering examination satisfactory to the Registration Bureau, will be notified to this effect and, if desired by him, the Registration Bureau will appoint an examining board in the State of which applicant is a resident, to conduct the examination in accordance with standards approved by the Registration Bureau, the cost of such examination to be paid by the applicant.

An independent investigation such as is conducted by the Bureau often requires considerable time, (two weeks to six months) therefore, it is suggested that an engineer not wait until he actually needs a Certificate of Qualification but that he file his application with the Bureau whenever convenient, so that a certified copy of his professional record may be available at any time for presentation to State Boards of Registration with which he desires registration, or for any other appropriate purpose.

Information secured from references is for confidential use of the Bureau in verifying and passing upon professional records of applicants and the source and character of this information will not be divulged except in special cases when desired by legally authorized State Boards of Registration.

Applications for Certificates of Qualification must be made on forms furnished by the Bureau and filed with the Executive Secretary, National Bureau of Engineering Registration, P. O. Drawer 1404, Columbia, S. C.

* * *

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Western Meeting
October 3, 1934

A cordial invitation to attend the Western Conference of the National Society of Professional Engineers, to be held in Portland, Oregon, on October 3, 1934, at 8:00 P. M. in the Multnomah Hotel, is extended to professional Engineers on the Pacific Coast.

The speakers at this meeting will be Dr. D. B. Steinman, President, NSPE, who will explain the organization and the purpose of the Society; and Mr. E. A. Wheatley, Registrar, Association of Professional Engineers of British Columbia, who will speak on "What a National Society of Professional Engineers can Accomplish." Colonel Hugh A. Kelly, Vice-President, and T. Keith Legare, Executive Secretary of NSPE, will also take part in the conference. Mr. J. L. Franzen, President, Professional Engineers of Oregon, will be the presiding officer.

* * *

MEETING OF WESTERN CHAPTERS
October 13, 1934

A conference of chapters, representing the western part of New York State, has been arranged for Saturday, October 13th. This conference will take place in Buffalo and will be addressed by President Chapman and Past President Steinman. The subject of the affiliation of the New York State Society with the new National Society of Professional Engineers will be presented and discussed.

All Engineers who can do so should avail themselves of this opportunity to consider the problems concerning both the State Society and the new National organization of which Dr. D. B. Steinman is the President.

* * *

A Referendum

(Continued from Page 3)

per annum, to be collected by the State Society through its County Chapters. (In States without Member State Societies, National Society dues are $10.00 per annum.)

It is desirable that the total cost for National, State and County membership, should not exceed $10.00 per annum. This would require reducing New York State Society dues to $3.00, and County Chapter dues to a maximum of $3.00 (in counties where $5.00 dues prevail; in other cases different adjustments would be necessary). Can this be accomplished? The alternative is to collect $4.00 per annum from each State Society member in addition to his present State Society and County Chapter dues.

In order to secure an expression of opinion and at the same time expedite action upon the part of the New York State Society (the New Jersey and Connecticut Associations have already ratified their affiliation) there is enclosed herewith a postcard ballot to be filled out by the individual member. In addition, President Chapman has appealed to each Chapter to devote its next regular meeting (a special meeting should be called if necessary) to a discussion of affiliation with the National Society.

For the information of members, the complete minutes of the National Society meeting of September 3rd, together with the adopted constitution and a statement of objectives, is published elsewhere in this issue.

It is hoped that every member will study the proposals, attend his Chapter meeting and return his ballot at the earliest possible moment.

* * *

National Society Meeting

(Continued from Page 4)

form of organization. Their results and achievements to date have made history for the Engineering Profession. In order to extend this program of service and accomplishment for the Profession on a national scale, the State Societies already functioning have united to form this National Society of Professional Engineers.

In this organization, the essential importance of the local unit is recognized. The National Society, the State Societies, and the County Chapters are closely and reciprocally integrated, and all are regarded of equal importance. Membership in one involves membership in all, wherever State Societies and County Chapters are organized.

The National Society starts with an organized membership of 3000 Professional Engineers. It is confidently expected that, within a few years, we shall have 20,000 members.

There are now 40,000 registered Professional Engineers in the United States. Our goal is to have an Engineers' Registration Law and a State Society of Professional Engineers in every State, and to have every Professional Engineer enrolled as a member of the National Society and of its constituent State Society. Thus will be realized the dream of a united, integrated, organized Profession.

The National Society of Professional Enginers is a *purposeful* organization. We have a definite, tangible, constructive program before us, and we have the knowledge, energy, and will to accomplish it.

The National Society of Professional Engineers is a *militant* organization. We are organized to fight for the rights of the Engineer whenever and wherever they are jeopardized and for the interests of the Profession whenever they can be promoted.

The National Society of Profession-

al Engineers is an *effective* organization. It is an organization of enthusiastic workers and experienced leaders, all imbued with a vision of the future of the Engineering Profession.

The National Society of Professional Engineers is a *human* organization. It is devoted to the human side of the Engineering Profession. It is interested in the Engineer as a human being, and is organized for the practical advancement of the social and economic welfare of the individual Engineer.

The National Society of Professional Engineers is a *needed* organization. It has come into existence at a critical time and in response to a definite need:—a need for a nationwide organization devoted to the common interests and aspirations of all Engineers; a need for an organization devoted to fostering unity, concerted effort, and fraternal cooperation within the Profession; a need for an organization uniting Engineers of all sections of the country, of all branches of the Profession, in a common cause; a need for an organization to serve as the voice of a united Engineering Profession in governmental councils and in public relations activities; a need for an organzation devoted to a planned campaign for the advancement of the Profession in public appreciation, recognition, and esteem.

Since it is *non-technical*, the National Society of Professional Engiiners is not confined in its appeal and in its service to members of one branch of the Profession; it is all-inclusive, for all Professional Engineers throughout the land. *The technical problems of Civil, Mechanical, Mining, Electrical and Chemical Engineers are divergent; but the professional problems are alike.* Just as the American Medical Association and the American Bar Association are unified national organizations representing the *professional* interests of the medical and legal professions, so the National Society of Professional Engineers is needed to provide for the *professional* interests of the Engineering Profession.

The National Society of Professional Engineers is more than a council or federation of State Societies. Every Professional Engineer who is a member of a State Society will also be, personally and individually, a member of the National Society, and direct personal contact and responsiveness will be maintained. A *professional* magazine (non-technical) will be published and distributed to all members, with a view to focussing and converging thought on the problems of the Profession and the progress of the National Society in conquering these problems. Dues will be kept to a minimum, and a policy of maximum economy in the administration of Society funds will be maintained. The National Society is committed to a program of building up reserve funds to be used only in emergencies and for relieving economic distress.

Thousands of Engineers throughout the United States are banded together in this organization. We are uniting our efforts to make pleasanter the relations and working conditions within the Profession. We are seeking to relieve the Engineer of economic pressure so that his best energies may be free for his high service to civilization and human progress. *We are striving, through organized effort and publicity, to secure for the Engineering Profession its rightful place in public esteem, and for the members of that Profession more adequate recognition and recompense for their indispensable services to society.*

We are members of the National Society of Professional Engineers because we believe that every man is a debtor to his Profession. We believe that it is our moral obligation, as well as our personal interest, to strive for the advancement of the standards and the standing of our Profession. We believe that collective effort is most effective to achieve the desired results. We are therefore banded together in the National Society of Professional Engineers in order to unite our strength toward the accomplishment of our desired purpose.

By organized effort for the welfare of our Profession, we are benefiting not only ourselves but also all of our fellow-Engineers and the Engineers of future generations. For their sake, as well as for our own, we want to do whatever can be done to make Engineering a nobler and more satisfying Profession for those who consecrate themselves to that calling.

These are our ideals and our purposes. They are not visionary but practical. Upon them, our National Society has its firm foundation; by their progressive realization must be measured the true success of our organization.

If you believe in these ideals and these purposes, join the National Society of Professional Engineers and share in the satisfaction of fraternal cooperation, enthusiastic effort, and successful achievement in our common cause—the advancement of the Engineering Profession.

Mr. Legare then formally introduced the Society's objectives, which were adopted and ordered spread on the minutes. They follow:

1. To promote the public welfare and to advance and protect the economic and professional interests of the engineer, individually and collectively, through united effort, legislation, and public relations.
2. To organize, coordinate, unite, and extend the activities of state societies of professional engineers and their county chapters.
3. To strengthen, unify, extend and enforce state legislation protecting the public welfare, the practice of engineering, and the designation "Engineer."
4. To protect the engineer against exploitation, unprofessional competition, unlawful encroachment, and restriction of rights of practice.
5. To improve conditions of employment and methods of engaging engineering services.
6. To wage a militant campaign for more adequate compensation for engineering services.
7. To extend employment service and build up a reserve fund for assisting engineers in distress.
8. To encourage and guide student engineers and engineering assistants.
9. To promote cooperative and fraternal relations within the profession.
10. To conduct a planned campaign for the advancement of the engineering profession in public recognition, confidence, and esteem.

Mr. Griffin then offered a statement which presented his views of the national organization and which, he felt, stated the position of the American Association of Engineers. It follows:

A. A. E.'s Position. First, I should like to outline to you, briefly, some of the considerations resulting in the proposal by A. A. E. for a cooperative movement leading toward the formation of the National Society of Professional Engineers. As a natural outgrowth of the licensing movement, in which A. A. E. is the pioneer organization, local societies of the type represented by the New York State Society of Professional Engineers, have been formed and now exist in at least six states, New York, New Jersey, Connecticut, West Virginia, and Oregon. As a consequence, and also from the fact that representations were received by the A. A. E. Board of Directors from time to time to assist in the development of similar societies in other states, that Board recognized a spreading movement for the development of state societies, which development A. A. E. has encouraged.

Logically, the Board also recognized that future development of state societies could be best promoted by a national organization of which the state societies would become a part. Furthermore, it was the belief of some members of the Board that effective work in the field of professional welfare should be accomplished on a national scale by such a set-up, i. e., state societies banded together in a national society. The next step was consideration of how A. A. E. might use its facilities as such a national society. This consideration finally led to the action taken by the Board in October, 1933, when it decided to actively promote such a combination of organizations by offering its facilities —either as constituted or as reorganized—as might be found necessary and desirable, in a movement in which the existing state societies would be invited to cooperate. That is at least one reason why we are here today.

A. A. E. Has Much at Stake. Let us now look, for a moment, at some of the internal problems that A. A. E. will have to solve in the event of reorganization, if that is found necessary and desirable. Suffice it to list a few of the more important items, such as

Employment service, Life insurance contracts, Vocational guidance and its nation-wide organization, Clausen award, Registered and non-registered members, Life members, Local chapters.

Role of the Professional Welfare Society. There is little doubt that the professional welfare society has a difficult role. Man is, by nature, a very selfish animal, whether or not he is willing to admit it. Men join technical societies to improve themselves through professional contacts and by reaping the benefit of the knowledge and experience of others through technical papers and discussions. Men join professional welfare societies to cooperate in the improvement of their profession and the status of their fellow professionals, in some cases hop-

ing, perhaps, that by so doing they will eventually improve their own status. If the professional welfare society is not continuously and plentifully blessed with able and enthusiastic workers and leaders, it is sure to have a hard road to travel.

Cooperation with other organizations. The National Society of Professional Engineers should predicate its existence on the fact that there are enough far-sighted engineers in this country who can and will see the logic in belonging to two engineering societies—the technical society and the professional welfare society. There should be no overlapping functions between these two societies. There must be complete cooperation. Members and prospective members of the National Society of Professional Engineers should be encouraged to join the technical society representing their branch of their profession.

The National Society of Professional Engineers might wisely go further. It might wisely condition full membership privileges on membership in the appropriate technical society. One trouble with the engineering profession has been, and is today, that there are too many organizations with overlapping functions, breeding jealousies and disharmony. Let us here "make haste slowly," doing our utmost at every step to secure cooperation with those whose interests are in and for the engineering profession.

Membership. There is one last thought that I want to convey to you, and that is on a subject to which we should give the most careful consideration—the subject of membership. No organization of the welfare type will succeed in the long run by making itself highly selective. That is a privilege reserved only for the technical society. A welfare society, such as we now contemplate, must, except in isolated cases, have weight of numbers.

Bear in mind that only about half of the states have registration laws and some of these laws cover only certain branches and that at least 80% of the listed 225,000, more or less, so-called technical engineers are subprofessional engineers who could not qualify for a professional license such as is required in New York State and New Jersey. Even in New York State, in 1930, only 8,500 engineers out of 34,378 were licensed. I cite these figures to show that we must look beyond the registered group for our members if we are to begin to tap the great reservoir of the engineering profession.

There existed less than two years ago, and may exist today, not less than 20 organized, active, state-wide engineering societies of various types located in 16 states and having a combined membership of several thousand, in the field of potential members of the National Society.

Consideration was then given to the report of the Constitution Committee and its draft of the instrument. Fifteen sections were approved as submitted after thorough discussion. Three sections were revised. These sections related to objectives, membership and affiliation by State Society units, and as revised are as follows:

OBJECTS—The objects of this Society are to represent the body of Professional Engineers in the United States with a view to promoting the public interest as affected by the service of the Engineer, and safeguarding and strengthening the professional body for this purpose; to advance the professional and economic interests of the Engineer through legislation, care of public relations, maintenance of the integrity of professional practice, and mutual aid and support; to unite, coordinate and assist the activities of the State Societies of Professional Engineers and their local chapters.

MEMBERSHIP — The membership shall be limited to Professional Engineers. Professional Engineers shall be defined (a) in states having registration laws, as Engineers who are legally registered or licensed; (b) in states not yet having registration laws, as Engineers who are legally registered in another state, or certified by the National Council of State Boards of Engineering Examiners, or, up to January 1st, 1937, by the Board of Directors of a constituent or cooperating organization as having equivalent qualifications. After January 1st, 1937, members who have secured admission through certification of a Board of Directors of a member organization shall be dropped from membership unless they shall have otherwise qualified as herein set forth.

MEMBERS STATE SOCIETIES—Only State Societies constituted primarily or principally of Professional Engineers shall be eligible for affiliation as Member State Societies. Only the Professional Engineer members of a Member State Society shall have a voice in the affairs of the National Society and be included in the number determining the voting power of its representative on the Board of Directors. A minimum of ten Professional Engineers shall be required for the formation and chartering of a Member State Society. One organization in each State, approved by the Board of Directors of the National Society as qualifying under this constitution, may become a Member State Society, upon written acceptance of this constitution.

President Steinman then appointed the nominating committee, as follows:

T. Keith Legare, Chairman, South Carolina; H. E. Harris, Connecticut; Morris Goodkind, New Jersey; S. A. Keast, Pennsylvania; Arthur V. Sheridan, New York.

The membership committee submitted its report as follows:

We mailed out questionnaires to over forty engineering societies requesting information as to their membership. Nineteen replies have been received, eighteen being from state societies and one from a local organization. These reports show a membership of 5,137, of which about 3,200 are registered engineers. Replies have not yet been received from fourteen state societies, probably due to the fact that some of these societies are not now active or that their officers are away on vacation. The attached tabulation of questionnaire gives information in detail.

A meeting has been arranged in Portland, Oregon, for October 3, 1934, at which Mr. Franzen, president of the Professional Engineers of Oregon, will preside and the speakers will be D. B. Steinman and Mr. E. A. Wheatley, Registrar of the Association of Professional Engineers of British Columbia. All engineers of the Northwest will be invited to attend this meeting, the purpose of which is to inform these engineers of the objectives of the National Society of Professional Engineers and its plan of organization.

It is recommended that 2,000 copies of a booklet be printed and used as a prospectus of N. S. P. E., this booklet to contain a list of the officers of the Society, the list of Objectives, the Constitution, and a statement of Ideals and Purposes prepared by Dr. D. B. Steinman.

Respectfully submitted,
T. Keith Legaré, Chairman
Morris Goodkind
Frederick R. Harris
Willard S. Conlon.

List of State Societies Which Have Not Reported Membership

Arkansas Association of Surveyors, Civil Enginers and Architects.
Professional Engineers of Oregon.
Minnesota Society of Licensing for Engineers.
Colorado Society of Engineers.
Illinois Society of Engineers.
Indiana Engineering Society.
Iowa Engineering Society.
Louisiana Engineering Society.
Masachusetts State Engineers Association.
Montana Society of Engineers.
North Carolina Society of Engineers.
Tennessee Society of Engineers.
Utah Society of Engineers.
Wyoming Engineering Society.

The meeting then recessed till 2:00 P. M. for luncheon and to provide opportunity for nominations for officers.

The meeting reconvened at 2:45. Nominations for officers, to hold office till January 1st, 1936, were then submitted. They follow:

President, D. B. Steinman, New York; 1st Vice-President, T. W. Battin, Pennsylvania; 2d Vice-President, Hugh A. Kelly, New Jersey; Treasurer, Willard S. Conlon, Connecticut.

Election followed and confirmed the nominating committee's report unanimously. With the induction to office of the permanent officers, President Steinman requested as the next order of business the adoption of the revised constitution. This was done without a dissenting voice.

Constitution of The National Society of Professional Engineers

Preamble—Recognizing that service to Society, to State, and to Profession is the premise upon which individual opportunity must be builded, the National Society of Professional Engineers does herewith dedicate itself to the promotion and protection of the profession of engineering as a social and economic influence vital to the affairs of men and of these United States.

Name—The name of this organization shall be the National Society of Professional Engineers.

Objects—The objects of this Society are to represent the body of Professional Engineers in the United States

with a view to promoting the public interest as affected by the service of the Engineer, and safeguarding and strengthening the professional body for this purpose; to advance the professional and economic interests of the Engineer through legislation, care of public relations, maintenance of the integrity of professional practice, and mutual aid and support; to unite, coordinate and assist the activities of the State Societies of Professional Engineers and their local chapters.

Headquarters—The main offices of this Society shall be located at Washington, D. C., or such other place as may be designated by the Board of Directors.

Membership—The membership shall be limited to Professional Engineers. Professional Engineers shall be defined: (a)—in states having registration laws, as Engineers who are legally registered or licensed; (b) in states not yet having registration laws, as Engineers who are legally registered in another state, or certified by the National Council of State Boards of Engineering Examiners, or, up to January 1st, 1937, by the Board of Directors of a constituent or cooperating organization as having equivalent qualifications. After January 1st, 1937, members who have secured admission through certification of a Board of Directors of a member organization shall be dropped from membership unless they shall have otherwise qualified as herein set forth.

Member State Societies—Only State Societies constituted primarily or principally of Professional Engineers shall be eligible for affiliation as Member State Societies. Only the Professional Engineer members of a Member State Society shall have a voice in the affairs of the National Society and be included in the number determining the voting power of its representative on the Board of Directors. A minimum of ten Professional Engineers shall be required for formation and chartering of a Members State Society. One organization in each State, approved by the Board of Directors of the National Society as qualifying under this constitution, may become a Member State Society, upon written acceptance of this constitution.

Reciprocal Relationship — In any State having a Member Society, every Professional Engineer who is a member of such Member State Society will automatically become a member of the National Society, and no resident can obtain or retain membership in the National Society except through membership in such Member State Society. State Society will automatically become a member of the National Society, and no resident can obtain or retain membership in the National Society except through membership in such Member State Society.

Officers—The officers of the National Society shall be a President, two (2) Vice-Presidents, a Treasurer and a salaried Executive Secretary, who shall each perform the duties usually pertaining to the respective offices

Board of Directors—The Board of Directors shall consist of the officers of the National Society, and of one representative from each Member State Society who shall be named annually by the said State Society. Each member of the Board of Directors shall have one vote except that each State Society representative shall have one vote for each 1000 (or fraction thereof) legally registered professional engineer members of the State Society. The Board of Directors shall determine questions of policy and shall meet on call of the President of the National Society.

Nominations—Nominations for officers shall be made by a committee of five, who shall be appointed by the Board of Directors. Additional nominations may be made by petition of fifty members.

Elections—Elections of officers (except the Executive Secretary) shall be made annually by plurality vote on individual letter ballots sent to all members of the National Society. The Executive Secretary shall be appointed by the Board of Directors and shall hold office at its pleasure.

Committees—The Committees of the National Society shall be, Executive, Legislative, Public Relations, Professional Relations, Publication, Membership, and such other committees as may be desirable. All committees shall be appointed by the President and shall perform such duties as may be assigned by him.

Conventions—A convention shall be held annually at such time and place as may be selected by the Executive Committee.

Dues—The dues for membership in the National Society for each professional engineer member of a Member State Society shall be four dollars per annum, one dollar of which shall be for subscription to the magazine to be published by the National Society and three dollars of which shall be for the activities of the National Society. These four dollars shall be collected by the County Chapters or State Societies along with the dues of the County Chapter and of the State Society. For members residing in States where Member State Societies have not yet been established, the dues shall be ten dollars per annum paid direct to the National Society, of which sum six dollars shall be set aside in a special "Extension Fund" to be used by the National Society for the purpose of promoting legislation and organizing State Societies in additional States.

State Autonomy—In all matters of state or local concern, the Member State Societies shall retain full autonomy, but may call upon the National Society for advice, counsel and assistance. The National Society may recommend state legislation and procedure in the interests of uniformity and efficiency, but action upon these recommendations shall be determined by the Member State Society.

Cooperation—The National Society shall cooperate with all national agencies having allied interests and may give its assistance and support to such agencies. The activities of the National Society shall be restricted to the professional interests of the Engineer, leaving all technical activities to the established technical societies. It shall be the aim of the National Society to promote unification of organization and to discourage duplication of functions.

Reserve Funds—All divisions of the organization (national, state, and local chapter) shall operate with maximum economy, and shall endeavor to build up reserve funds to be used only at critical periods for mutual assistance in carrying out the essential objectives of the organization.

TABULATION OF STATE SOCIETIES—AUGUST 31, 1934

Name of Society	Date Organized	Total Members	Registered Engineers	Registration Laws	Date of Approval
1. N. Y. State Society Prof. Engrs.	1926	1800	1800	Yes	
2. N. J. Assn. of Prof. Engrs. & L. S.	1921	354	354	Yes	Sept. 8, 1934
3. Penn. Society of Prof. Engrs.	1933	88	88	Yes	Oct. 1934
4. W. Va. Society of Prof. Engrs.	1934	145	112	Yes	(Anytime) 1936
5. S. C. Society of Engineers	1929 (1921)	152	60	Yes	Jan. 1935
6. Kansas Engineering Society	1915	162	84	Yes	Feb. 1935
7. Ohio Engineering Society	1878	600	(360)	Yes	Feb. 1935
8. Michigan Engineering Society	1880	456	(272)	Yes	
9. Engineering Society of Wisconsin	1909	350	(210)	Yes	Feb. 1935
10. South Dakota Society of Engrs. & Archts.		40	40	Yes	Jan. 1935
11. Florida Engineering Society	1916	223	(134)	Yes	Oct. 1934
12. Conn. Society of Prof. Engrs.	1932	60	8	No	Aug. 23, 1934
13. Maryland Assn. of Engineers	1929	75		No	Jan. 1935
14. Maine Assn. of Engineers	1911	139		No	Feb. 1935
15. Nebraska Engineers Round-Up	1931			No	Feb. 1935
16. N. D. Society of Engineers	1909	38		No	
17. Vermont Society of Engineers	1912	133	3	No	March 1935
18. Washington (D. C.) Society of Engrs.	1905	553		No	
19. Associated Engrs. of Spokane, Wash.	1914	85		No	
Totals		5,450	3,525		

(Figures in brackets are estimated)

Amendments—Amendments may be initiated by the Board of Directors or by any Member State Society. All amendments to become effective must receive a favorable vote of two-thirds of the votes cast by letter ballot.

A recess of five minutes was then taken to permit the officers to consider the selection of an Executive Secretary. Upon resumption of business, President Steinman announced the appointment of Mr. T. Keith Legare of South Carolina as Executive Secretary, and that after January 1st Mr. Legare would take up his residence in Washington, D. C., and open an office in that city. Mr. Knight was thanked, by rising vote, for his services as temporary Secretary. It was then agreed by all present to reimburse Mr. Knight for his secretarial expenses as soon as funds were available. It was also agreed to reimburse Messrs. Keast of Philadelphia, Legare of South Carolina, Conlon of Connecticut, and Chamberlin of Washington for their travelling expenses to attend this meeting. Mr. Chamberlin stated that he would submit his bill of expenses to the A. A. E. Chicago office and that the A. A. E. would take care of it.

A call for underwriting funds was then made by President Steinman, who offered to advance the sum of $100.00. This was followed by others, as follows:

Dr. David B. Steinman	$ 100.00
Col. Hugh A. Kelly	100.00
Arthur V. Sheridan	100.00
Gerald W. Knight	25.00
Morris Goodkind	25.00
Connecticut Soc. Prof. Eng'rs.	100.00
Pennsylvania Soc. Prof. Eng'rs.	25.00
N. J. Assn. of Prof. Eng'rs & L. S.	25.00
N. J. State Board of P. E. & L. S.	100.00
American Association of Engineers	——

Mr. Legare made application as the first individual member and offered his check for $10.

Mr. Willard S. Conlon, speaking for the Connecticut Society, applied for a charter for his state. Upon a vote for approval of the Connecticut request, it was unanimous in favor. Col. Kelly then made application for a charter for the New Jersey State Association. This application was approved by vote. Dr. Steinman, representing the New York Society, then made application for a charter for the New York Society, and the application was approved. Mr. S. A. Keast of Pennsylvania made application for a charter for the Pennsylvania Society, and this was likewise voted in.

Mr. Legare then offered a resolution inviting the American Association of Engineers to participate as a cooperative organization, and the secretary was instructed to prepare such an invitation.

A committee of three was then appointed to take care of press reports of the meeting. Messrs. Knight, Griffin and Legare agreed to so serve, and following adjournment released to the Associated Press and United Press a written statement covering the meeting which adjourned at 5:10 P. M.

Respectfully submitted,
GERALD W. KNIGHT,
Secretary.

Science Improving American Civilization

(Continued from Page 5)

nation results. It gradually becomes recognized that human relations are also subject to natural laws. These form the fundamental basis of morality, sociology, and economics. Thus in an era when many old conventions become outworn, the clear teaching of science is of especial value: If man will learn the truth and abide by it, that truth shall make him free.

The spirit of science is simply an attitude that men may have toward the world. It is a desire to find out how this outside environment, in which they live, works coupled with the desire to increase their power to control it. It is an attitude that looks at life, determines its methods of operation, and adjusts them, so far as is possible, to human needs. This attitude of science is one whose reasonableness makes an immediate appeal, and whose successes in such practical applications as engineering and medicine have been convincing.

In some quarters science has been accused of bringing about technological unemployment. The statistics, of the relative increase of population in the cities whose people live by technological employment, show, however, that the greater demands of a higher scale of living have more than compensated for labor saving machinery. Many aspects of science are worldwide in scope, and do not fit with certain nationalistic aspirations. For this reason Nazi Germany has exiled hundreds of her leading men of science, and has resigned her scientific leadership. The more democratic nations of America and Britain, however, continue to have faith that knowledge of the truth is the most important step out of their present difficulties, and are turning all efforts towards solving their economic and social problems in a scientific way.

It is of especial interest to note that the nations which are now the leaders of the scientific world, are those in which in all forms of enterprise, such as agriculture, business and politics, *individual initiative is at a premium.* The American farmers who have the imagination and self-reliance to carve an empire out of a wilderness have also the imagination to develop the tools necessary to do the job, and the world is enriched by new agricultural implements which make of farming an industry instead of a plodding drudgery. The most humble employee knows that in the long run ability and good work are rewarded with advancement, and that the path to the top is open for the man who can make the grade. Every citizen is taught that he shares the responsibility for his community's political welfare, and knows that if he has the necessary qualities of leadership he may take his place in the councils of the government. But these qualities of imagination, clear thinking and initiative are precisely those which are required to make notable advances in science. Truly it is not chance that a nation in which initiative and self-reliance are held as high virtues should become the leader of the world of science.

Our nation's scientific leadership results, however, not only from its breeding of scientists with imagination and enterprise. By far the larger part of the fundamental scientific work now being done in this country is financed directly or indirectly by men whose own imagination and enterprise have brought them wealth, and who have seen in science the work of kindred spirits aimed toward the enrichment of life. The notable work of the Rockefeller Institute in the eradication of yellow fever and hookworm, Carnegie's Mt. Wilson Observatory which has shown us that we live in a universe hundreds of light years in extent, the endowments of such great private universities as Chicago, Harvard, Columbia and others devoted to all fields of research, these and many more have been made possible through the vision of leaders of American industry whose individual enterprise has brought them to the top. Except for practical questions such as those which can be answered by agricultural experiment stations, the Bureau of Standards and the Coast and Geodetic Survey, our national and state governments have not considered scientific investigation a part of their function, nor but for minor exceptions has any other government. If large financial rewards of business enterprise are made impossible, through legislation or otherwise, it will follow as the night the day that scientific advances will be greatly curtailed through lack of financial support.

It is true that industry owes a great debt to science. It is by use of the facts uncovered by science that industry has advanced beyond the primitive techniques of the middle ages. It is however equally true that science has from the beginning been a product of individual initiative, and the greater part of our own scientific work during the past generation has been made possible because in America individual business enterprise has been encouraged by large rewards.

The period closing in 1929 showed us at least that science and industry working together are capable of supplying us with more of the means of varied life than we would have dreamed a generation before. There is no reason why an appropriate adjustment of our economic system should not carry us far in advance of the stage we knew at that time. The physical means of supplying these needs are now in our hands.

The scientific method, of formulating hypotheses, carefully testing their consequences, and if satisfactory, applying the newly discovered laws to problems of engineering and medicine, has been extended successfully to biological and psychological problems. We now see these principles of science being applied with increasing success and vigor to economic and social problems. As this enthusiasm for the search for truth becomes a part of our national consciousness, who can doubt that the social and economic problems which appear now so formidable will find a ready solution.

Truly, the hope of our civilization lies in the advance of the spirit of science.

An End To Unemployment

(Continued from Page 6)

dissertation on the maintenance of peace that has ever been penned. He described in detail the moral elements in warfar—self-sacrifice, discipline, community of purpose, the devotion of individual abilities and possessions to objectives immeasurably higher than those of any individual—and he proclaimed the doctrine that warfare would continue its appeal to the finest and most virile spirits of each new generation unless and until it was replaced by something holding equal values. He demanded, in short, a "moral equivalent of war."

William James proposed as the moral equivalent an organized attack on the obstacles which Nature presents to the progress of man. He saw in his imagination millions of young men, drafted, or enlisting for a service of one or two years, engaged in draining swamps, driving highways through the mountains, assaulting in force the strongholds of Nature wherever she resists the well-being of man.

Is it not remarkable that we have come so nearly to meeting these conditions in the CWA, the CCC, and the FERA? How little more would be required to complete the picture!

There is needed first a careful study and laying out in advance of a multitude of socially desirable projects—such projects as shall slowly transform the physical aspects of our country, from the Atlantic to the Pacific and from Canada to the Gulf, into forms capable of ministering to the highest enjoyment of its citizens. Then some form of permanent organization must be provided. The Engineers' Corps of the army suggests itself. It could readily develop "cadres" —skeleton organizations—capable of indefinite expansion, so as to take care of widely varying numbers of workers. The experience in housing, transportation, and direction of work would be professionally valuable. A modified discipline could be developed —something short of wartime rigidity, but adapted to the building of an esprit de corps, and of such sort as would turn the recruit back into private industry a better man for his own purposes than when he entered the service.

It is time to have done with emergency improvisations in this matter, and to develop from it something not merely useful, but having a content of social regeneration.

But beyond these measures is needed a body of employment, massive and slow moving, perhaps, but more nearly normal in its nature—something from which the transition to private employment will be natural and incidental. Such a resource is to be found in a permanently and efficiently organized Public Works Administration.

So much has been written and so much done with regard to this matter that little needs to be said here. But two observations may properly be made.

To be effective, a Public Works Administration must continue from administration to administration irrespective of political changes. It was perhaps the most serious mistake of the present Administration to throw overboard the body of preparatory work in this field, made ready to its hand. This error destroyed that coordinated action of PWA and NRA on which the best hopes of a managed recovery depended, and left us with little more than normal processes to add to the primary and effective impulse given through the personality of the President and the early effect of the NRA.

The other point to be noted is that this PWA work, while extensively planned ahead should consist of normal projects of government—local, state, and national—and should be handled through normal construction channels and under normal working conditions. This work should not be the subject of social experimentation. When a worker passes into this employment from private business or vice versa, the change should be unnoticeable. This is necessary if the change is to be made without social disturbance.

A National System of Employment Offices Needed

We have, then, limited monetary relief, unlimited work on socially useful tasks at subsistence wages, and a normally increasing volume of public construction under standard conditions, concentrated in periods of greatest unemployment. These are our three lines of defense. In addition, we need a new instrument of social organization to bring them into correlated effectiveness.

The needed instrument is a national system of employment offices, or a nationally coordinated system of state employment offices. To this institution must go every one who would draw on this unemployment reserve and every one who seeks subsistence employment. It should also serve as the logical (though not exclusive) recruiting station for labor required on great construction works, whether private or public.

Such a system would give us definite information at any given moment as to the amount, location, kind, and duration of unemployment. For no one should be deemed as unemployed who does not register. Registration will be inevitable on the part of the honest and needy worker, for due and respectable relief comes to him through that act. Non-workers who will not apply are pathological or criminal rather than economic problems. They will by this means be readily recognized and should not be numbered among the respectable unemployed. This system will give us, for the first time, a definite knowledge of the size and character of our problem and we can attack its solution by logical processes. Our ignorance hitherto has been fundamental. There are no reliable unemployment statistics in this country. There is no substitute for the practise of gathering them at the point where relief is offered.

Besides serving this overall purpose, the employment-office system will be in position to help the individual man, watching for the shifts in employment which are favorable to his trade or calling, directing him by groups and individually to opportunities for reemployment in private business. If an effective administration can be built up, these offices will serve the employers also. But they must be given no monopoly in general employment. The competition of properly controlled private exchanges must be permitted if the efficiency of public offices is to be maintained.

Much of the Program is Under Way Or Being Formed

It is interesting to pause at this point to observe how much of the ideal program outlined is already under way or in process of formation.

The elements of the "moral equivalent of war," as already noted, exist in the CWA, CCC, and FERA. The planning for it is well under way through the studies in progress under the excellent Planning Board of the PWA. The Engineers' Corps of the Army will need little time or special encouragement to set up its operating staff. Finally, so far as one onlooker can judge, there is excellent material for an organizing head in Mr. Harry L. Hopkins.

The least hopeful element is the PWA. In spite of much excellent work done from the administrator down, its undertakings have suffered from an unwise throwing overboard of the preparatory work done in the previous administration, and from an ignoring of the importance of the time factor and the relation of the work to other elements of the Administration's program. There is a constructive or reconstructive job to be done here.

The governmentally supervised system of employment agencies is completely a development of the future, but it is quite definitely in the plans of the Secretary of Labor. This is an undertaking which she is well fitted to organize and administer, and she should be encouraged to do so.

We are well on the way, via these uncoordinated undertakings, to coordinated measures for the relief of unemployment. We are within reach of that goal which our industrial civilization is physically capable of reaching —a job for every man at any time, whether for thousands or for millions —subsistence employment, or better, when private employment fails. Unless our civilization can furnish this employment, it is doomed to a deserved decay. Let us not deceive ourselves in this matter.

Business is an Honorable Profession

We now come to the problem which was passed over earlier in this paper —the means of financing so extensive a program. Two elements must be controlled if we are to bring this large-scale and thorough solution within the range of practical policy. We must reduce the volume of unemployment and finance the relief of that which remains. These are tasks of no mean order.

Our first step is to decide whether we shall endeavor to do this by taking better care of our present economic organization, protecting it from disruption, building it up into a state of health and strength, and setting it to work safely at a higher rate than it has ever known before; or, on the other hand, proceed by throttling it, casting it aside, and seeking some

other social servant—or Frankenstein —to take its place. Over this question we are vacillating when vacillation is dangerous.

Our first duty is to understand the nature of the profit-supported, credit-money business organization by which we live. Until we have some notion as to its functional activity we can neither decide whether it can be made to suit our purposes, nor can we be sure that our hopeful experiments may not prevent it from serving the ends we seek.

The term "business," which we have been using, is an honorable word. It should be confined in its application to those activities involving land, labor, capital, and management which are essentially wealth-producing, whether in the fields of extraction, manufacture, transportation, distribution, or financing.

There are other activities which are not productive but destructive, and thus do not deserve the honorable name of business. These activities have been due in part to ignorance, in part to wrong standards of social conduct. They are to be found to a certain extent within the structure of business properly so-called in the form of unfair and harmful practises; but their greatest development has been as malignant financial and speculative growths which are for the most engendered and nournished by individuals who cannot properly be called "business men."

There has been a failure on the part of honest observers of the industrial process to distinguish between true business and these parasitical practises. This failure to distinguish threatens business with kinds and degrees of control which will seriously curtail its ability to produce and distribute wealth, and will thus render hopeless any such social program as we are considering.

The productive capacity of business is such that if it is fostered in its present and future development it can increase the production and distribution of wealth to all classes of society to the disadvantage of none, and at the same time permit the accumulation of ample reserves for any social emergency.

The amount of possible employment is not limited so that it has to be shared. Purchasing power is not a fixed amount so that it has to be haggled over. New employment and new purchasing power can be created by encouraging business enterprise in an expanding production and distribution of goods and services; and this enterprise and this expansion can be so ordered as to avoid the follies of the era of speculative inflation.

It is evident that if business is to perform its normal, productive functions, there must be important changes in attitude and policy on the part of all elements of social structure.

Labor must be willing to govern its requests by the overall requirements of the industrial process, and not by the immediate self-interest of any restricted group.

Financial interests must refrain from building topheavy credit and speculative structures, and must be willing to look to true business service for their profit.

Government must distinguish between business in its proper sense and destructive practises which are unworthy of the name, giving the former adequate freedom and active encouragement while it restricts the latter. The methods of restriction must, therefore, be considered with great care. Above all, neither legislation nor administration policy should include elements which are unnecessary to the stated purpose, and which indicate ulterior and unstated purposes hostile to the profit system; and care must be taken to avoid the appointment of officials having discretionary power who are hostile to the profit system, and therefore incapable of assisting it to attain its full social usefulness.

Government must provide a sound monetary and credit system of reasonably steady purchasing power—these two characteristics not necessarily being contradictory; thus will business and agricultural operations be steadied, and financing for improvement and expansion be assured. It must encourage the free flow of savings into productive investment, instead of putting the whole process under suspicion.

The nature of our credit-money system is such that the normal means of increasing purchasing power is by an increase in bank borrowing. Available credit has been multiplied by governmental policy. But there must also be a willingness to borrow on the part of productive borrowers. Here the government's policies are seriously in question, in that they have generated a wide-spread distrust as to the permanence of our system—a distrust inevitably resulting from the legislative and appointive errors already mentioned.

Safety, as well as volume, of credit-money is essentially important. Safety—with no danger of subsequent deflation—would seem to be assured if we confine credit expansion to the financing of current operations of production and distribution, leaving capital expansion dependent on savings alone.

If business itself is to serve the social purposes I have just outlined, and serve its own interests in so doing, it must discipline itself, or submit to being disciplined in several particulars, among which are the following:

Business must be willing to outlaw those forms of competition which are in the long run socially destructive, even though immediately profitable.

Business must not be shortsighted in its distribution of the returns from an expanding industry, but must give due shares to labor, to the consumer, to management, and to capital.

Business management must be content with business profits, and not make its principal interest the search for illusory and unsocial speculative gains.

Business must not seek to protect itself unduly, but must be willing to undergo the dangers of such a degree of competitive freedom as will insure the orderly and continuous application of improved processes to lowering prices for the general good. Neither private profit nor general well-being will be served in the long run by attempting unduly to safeguard business operation and profit, even for the sake of stabilizing employment. Some measure of uncertainty, some percentage of mortality, is the price of social advance. But, while business retains its dangers, the worker must be safeguarded.

Business must cheerfully accept proper taxation for socially desirable purposes, and be willing in other ways to submit to that minimum of government control which the general interest requires.

Finally, business must develop a realistic social philcsophy. Its purposes must be crystal clear, its policies humanly useful.

Cooperation Between Business and Government

Let us further consider this lack of cooperation between business and government—this misunderstanding of our profit—supported, credit-money economy. It cannot be denied that profit itself is under suspicion.

It is profit from legitimate business as already defined, that is socially desirable. The immense profits of the 1928-1929 period were not earned from business but were derived from speculative inflation. They were, indeed, not profits at all, being mere borrowings on the future, based on bank indebtedness which had to be made good later not always by the original borrower, and in the payment of that indebtedness purchasing power was disastrously extinguished. "Profit," like "business," should be so defined that it becomes an honorable term, and a rational one as well.

Such profit must be actively encouraged—not merely tolerated. The revival of the sick industries, the reemployment of the unemployed, depends on the reappearance of generous profits. Only so can those unfortunate workers who are dependent on the capital-goods industries, on luxury and durable-goods manufacture, and on the service occupations hope to regain a foot-hold in our industrial society.

Shallow thinking has led to the doctrine that profit dries up activity; and this erroneous doctrine has hampered recovery. Profits, even when put in the bank, do not disappear from purchasing power. They instantly revitalize the circulating stream.

There are but three ways in which profits can disappear from circulation: by hoarding in the form of currency; by expatriation through unrepayable foreign loans or otherwise; or by the extinguishment in the banking system, when bank loans are being paid off faster than new ones are being made. We have been through all of these disasters in the past four years. So far as concerns the mechanics of the situation, these conditions *were* the disaster itself. The danger of renewing the two first is remote. The third becomes inevitable only after a period of inflation, and that we must beware of entering upon, for therein lay the causes of the miseries from which we are recovering.

No! Profit is safe, and profit is necessary, we are so organized that, if we guard the three channels by which

it may escape, it cannot fail to flow through the whole industrial structure and support in growing comfort the multitudes dependent on it; and in so doing it will inevitably tend to a broader distribution that is on a higher level—a distributon of plenty, not of need; and it will reach every useful member of our industrial society. We must turn our hand to this constructive process, instead of concentrating governmental support on labor policies, many of which we may view with sympathy, but yet with the realization that they have no power in themselves to add a yard of cloth or a single automobile tire to the consumption standard of the American worker.

Finally, profit is necessary for the social program. If encouraged, it can grow beyond any previous experience, so far as its total is concerned, even though the spectacular accumulations from non-business operations are prevented. These more widely distributed returns can easily support the taxation needed for such a radical development as we have been discussing, and for others left undiscussed, such as old-age pensions. If the hope of profit is destroyed, or if real profits are not allowed to exceed our best previous performance, such programs are nothing but useless waste paper and empty breath. For they have no other source of support in the heavens above, the earth beneath, or the waters that are under the earth.

Business Needs Politics—Politics Needs Business

For the sake of the common man, business and politics must come into new relations with each other. This is the conclusion of our study of the unemployment problem.

Business needs politics. For, in the end, politics rules. The controlling forces are not industrial, or financial, but social; and with these social forces it is the task of the politician to deal. As to the strength of these forces, or the skill with which they may be manipulated, there should be no remaining doubt in the mind of one who has observed the history of the past two years in this country, or of the last fifteen years in Europe. Politics rules—but its rule may as easily spell disaster as progress.

Politics and politicians need the help of constructive and productive business. For government is a clumsy and hopeless instrument for the production and distribution of material goods and service. It is business that provides goods and distributes them through employment. Without the profitable operation of business there is not the faint shadow of a chance that the populations on whose support the politician depends will have such satisfaction in life as to make them content with the leaders whom they have chosen. Without that satisfaction there is for the politician no alternative save desperate leadership in the descending spiral of social destruction —an act not of politics but of lowest demagoguery. "Politics," like "business" and "profit," is an horable term, and has its standards of conduct.

This essential alliance must be an open one. Its ends, while personally profitable, must be of such evident social worth that business can bring its personal and financial support to a candidate, to a policy, or to a party, without concealment and without shame.

We have at hand the materials for a real New Era. We have in the President a leader of consummate political skill, devoted to the task of fruitful social reconstruction. We have an industrial organization, for the moment purged of the poison of financial folly, furnished with the tools, the skill, and the experience for building up the material well-being of society, and by no means deaf to the promptings of the social conscience. In the past this organization, based on the resources of our country, staffed by its capable citizens, energized by science and engineering, has built up general standards of living unknown in any other time or place. This progress need not and must not end.

If politics and business can come to a working agreement for the public good, it will not end.

* * *

Engineering as a Profession

(Continued from Page 7)

managing, organizing and financing his work.

The technically trained sales-engineer in many cases renders strictly professional engineering services on behalf of his employer, and along with this development there has arisen a tendency on the part of large corporations towards commercializing engineering practice, which Mr. Eddy deplores. He has observed the growth of industrial and other companies whose operations in the field of engineering advice and design have encroached greatly upon the independent practice of the individual professional engineer. It is also noteworthy that an increasing proportion of the engineering profession consists of employees instead of independent practitioners, and this change has been accompanied by more detailed specialization, so much so that in many cases an engineer finds himself occupied continuously with problems of substantially the same kind, his work thus giving him no opportunity for broad experience.

As regards engineering societies, Mr. Eddy remarks that these perform an indispensable service, but there is to some extent overlapping and duplication of effort in their work of disseminating professional knowledge. In the United States he notes that greater stress is now being laid on the organization of the profession, as is shown by the fact that twenty-eight states now have registration laws, while the voluntary societies have made great efforts to foster the social branches of their work, particularly in connection with the unemployment of their members. He concludes that "the trend is unmistakable towards better things for the community, the profession and the individual engineer, to be secured in large measure by the cooperative effort of engineers made effective through engineering societies." The task which he outlines for these bodies is a huge one, and effective advance cannot be made without the individual participation of their members in the societies' work.

If the desired aim is to be reached, organizations like The Institute, whose main object is the acquirement and interchange of professional knowledge, must work in harmony with those other bodies whose duty it is to regulate the practice of professional engineering.

Ultimately the public estimation of the engineer as a professional man depends upon the competence, integrity and personal character of individual members of the profession. Membership in our engineering societies and professional associations must be regarded by the public as a guarantee of these qualities if professional recognition is to be generally accorded to the engineer.

* Trends in Engineering as a Profession in the United States of America." Address at the Annual Convention, Vancouver, B. C., July 11th, 1934, by Harrison P. Eddy, President American Society of Civil Engineers.

* * *

A New Approach to the Housing Problem

(Continued from Page 8)

power that would be released by even a nominal expenditure.

Take for example, the twenty-five million dollars which have been appropriated for the use of the New York Housing Authority. If this money should be spent in the manner proposed instead of the creation of one or two dubious model housing experiments, between two hundred and fifty and three hundred and fifty million dollars worth of construction could be started with that small amount as the initial impetus.

One last item which must not be overlooked, is the salutory effect on the thousands of men on so-called "made work," who would be spared from the soul destroying occupations of twiddling their thumbs and attempting to appear busy at the same time. For them to return to socially productive work can be likened only to Dante's first breath of fresh air after leaving the fetid abode of the damned.

* * *

Save the Engineer!

(Continued from Page 9)

layers, carpenters, painters, and other skilled mechanics working under the supervision of engineers, were in some instances paid as much as $2.00 an hour, while the highest pay for any engineer could not be more than $36.00 a week, or $1.20 an hour, and only in a very few jobs did engineers get the $36.00 rate.

The Civil Works program ended on March 31. Those engineers who continued to work after that date were transferred to Work Divisions of the Emergency Relief Administration at further reduced wages, and now only engineers who are not too proud to call themselves paupers and ask for relief can get a job. In a word, for engineers, it is beg or starve, while millions are being spent by the Government on engineering works.

There seems to be little chance that a good percentage of those now employed by the ERA, the successor of

the CWA, will be absorbed by industry before the end of the summer. This makes necessary relief plans for next winter similar to the CWA program. If we allow the plan to be conducted in the same manner as the CWA, all engineers that cannot make a living—and that is the majority—will have to choose between degradation or starvation. It is the first job of the National Society to prevent that by bringing pressure on the FERA to do justice to the engineers.

Only a very short time ago, a young draftsman, now selling life insurance, went into the office of the State Housing Authority in the hope of getting a job. He asked to see somebody about employment and was told that if he wanted a job he must get his name on the relief list.

It is clear that if we are to survive as a profession the plot to pauperize the engineers must be broken. We have at the head of the new society a handful of energetic men who have in the past been the motive power of all movements calculated to secure for the engineers their rights. I can mention the name of none more hard-working, energetic, and self sacrificing than Dr. D. B. Steinman, who is at the head of the new Society and through whose leadership and inspiration the organization meeting took place. But the work must not all be thrown on these few men. From them we must get inspiration and courage, and to them we must give our active cooperation, to the end that the outrage perpetrated on engineers shall stop.

The writer has observed that in practically all progressive organizations of engineers, the membership was made up largely of engineers in independent practice and Civil Service employees, while engineers working for corporations, public utilities, and private concerns took very little interest. The welfare of the profession affects all engineers, and little progress can be made until all of you realize that your assistance is necessary. Engineers in private concerns, the Society is yours as much as anybody else's. Join the local units, come to the meetings, participate in the work, and enjoy the benefits that will result.

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